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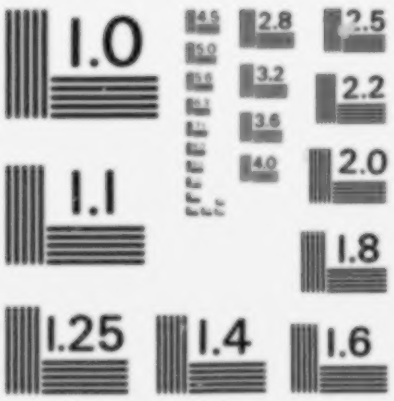
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By-Sigel, Irving E.; And Others

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Descriptors-*Child Development, Classification, Cognitive Development, Creativity, *Culturally Disadvantaged, Environmental Influences, Family Relationship, Haptic Perception, Language Ability, Parent Influence, *Preschool Children, *Research, Research Proposals, Self Actualization, Self Concept, *Technical Reports

Identifiers-Bidimensional Attention, *Head Start, Parent Interview

This document is an annual report for the academic year 1966-67 dealing with research of the Merrill-Palmer Institute conducted in conjunction with the Head Start Evaluation and Research Center of Michigan State University. Section one of the report consists of five research studies on learning and cognition: (1) Modification of Classificatory Competence and Level of Representation Among Lower-Class Negro Kindergarten Children (see abstract number ED 021 608); (2) Developmental Studies in Egocentricism: I. Violation of Expectancies; (3) Bidimensional Attention in Lower- and Middle-Class Preschool Children: A Developmental Study; (4) A Training Study of Object Related Fluency; and (5) Exploratory Studies in Creativity. Section two reports the current status of four projects in family studies: (1) Family Aspirations and Expectation; (2) The Dynamics of the Husband-Wife Relationship; (3) Parent-Child Interactions, Attitudes and Focus of Control; and (4) Early Environmental Stimulation. An appendix sets out a comprehensive parent interview form used in the Head Start project. (WD)

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# THE HEAD START EVALUATION AND RESEARCH CENTER

## 1966-1967

## Volume II: Research

A report to

**THE INSTITUTE FOR EDUCATIONAL DEVELOPMENT**

by

**Michigan State University**
**College of Home Economics**
**and**
**Merrill-Palmer Institute**

Director: Sarah D. Hervey, Michigan State University
in association with Irving E. Sigel, Merrill-Palmer Institute
Evaluation Coordinator: Norman L. Story, Michigan State University
Research Coordinator: Marjorie B. Clos, Merrill-Palmer Institute

East Lansing, Michigan
August, 1967

PS 001587

Annual Report

August 31, 1967

# The Program of Research
# of the
# Merrill-Palmer Institute
# in conjunction with the
# Head Start Evaluation and Research Center
# Michigan State University

Irving E. Sigel, Chairman of Research
Marjorie Clos, Research Coordinator

The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

PS 001587

## Participating Faculty

| | | |
|---|---|---|
| Irving E. Sigel, Ph.D.<br>Chairman of Research | Psychology | Cognition |
| Marjorie Clos, Ph.D. | Psychology | Learning |
| Patricia Olmsted, MA | Psychology | Cognition |
| Hyman Rodman, Ph.D. | Sociology | Family |
| Constantina Safilios-Rothschild, Ph.D. | Sociology | Family |
| Carolyn Shantz, Ph.D. | Psychology | Cognition |
| Muriel Wagner, MA | Nutrition | Nutrition as related to psychosocial status |
| John S. Watson, Ph.D. | Psychology | Learning and cognition |

## Research Assistants

Bela Feher, BA*

Elizabeth Ireland, BA

Stuart King, BA*

Richard Leinberry, BA*

Dessa Nemeth, BA

Patricia G. Voydanoff, MA

* Graduate students, Wayne State University

# Section I

## Learning and Cognition

Sigel, I. E., and Olmsted, Patricia
Modification of Classificatory Competence and Level of Representation among Lower-Class Negro Kindergarten Children

Shantz, Carolyn U., and Watson J. S.
Developmental Studies in Egocentricism: I. Violation of Expectancies

Watson, J. S.
Bidimensional Attention in Lower- and Middle-Class Preschool Children: A Developmental Study

Sigel, I. E., Ireland, Elizabeth, and Watson, J. S.
A Training Study in Object Related Fluency

Clos, Marjorie, and Serafica, Felicisima
Exploratory Studies in Creativity

# Introduction

The research component of the Head Start Evaluation and Research center is centered at the Merrill-Palmer Institute, supported by a subcontract from Michigan State University (see original proposal). Although the research program is housed at the Merrill-Palmer Institute in Detroit, some 80 miles from East Lansing, there is much interaction between the research and evaluation components.

The research program of the Merrill-Palmer Institute is consistent with the mission of the Head Start program, and therefore a large proportion of the research faculty could be engaged in this new endeavor. By so doing, it was possible to bring together the experience of a small but productive group of investigators, each of whom share general interest in the Head Start operation. The composition of the group is interdisciplinary in nature, including psychologists, two family sociologists, and one nutritionist.

The research program was planned during 1966 with the research faculty. The program, as devised by this group of investigators, was defined in three areas: (1) learning and cognition, (2) family organizational patterns, and (3) physical growth and nutrition. Because of budget limitations, it was possible to carry out research projects in only the first two areas. Nutrition studies are planned for 1967-68. Some minor modifications and expansions were undertaken which will be described in this report.

Learning and cognition studies for the year 1966-67 comprised five interlocking projects. Essentially the interest was in assessing facets of cognitive development abd concomitant learning capabilities. The study by Sigel and Olmsted involves assessment of classificatory behavior and of various intervention procedures employed to enhance classification skills. Classification behavior is in part a function of discriminations, and the question arises as to the ability of lower-class children to cope with discrimination learning tasks. Watson's study provides data on this issue.

The study of Shantz and Watson is the beginning of a larger program of measurement of egocentricity in young children. The significance of an ego-centric attitude in cognitive development has been described by Piaget. Rigorous assessment techniques are, however, still to be constructed. This is the crucial aspect of the Shantz and Watson work. In addition, they are interested in establishing base line data among middle-class boys and girls. With this, subsequent assessment of such behaviors among lower-class children would be undertaken, providing the basis for direct comparison.

One of the oft repeated clichés employed in describing lower-class Negro children is their dearth of linguistic skill. Language facility is involved in the other studies, but none of them is concerned with modification of this fundamental intellectual skill. The aim of the Sigel, Ireland, Watson study is to test the feasibility of increasing linguisitc fluency vis-a-vis object related words. Such endeavors are not to be confused with extending fluency in general, but fluency in words relevant to and appropriate for particular objects.

A further effort at enhancing discrimination skills and the utilization of novel responses is described in the study by Clos and Serafica.

These studies have been completed during this past year and the major findings will be reported. Unfortunately, time limitation prevents a complete write-up.

Two other studies begun in the summer of 1967 can only be mentioned since the data are still being analyzed. These studies were not planned, but grew directly out of some of the findings of ongoing research. A study by Patricia P. Olmsted grew out of the high frequency of color responses in the Categorization Test. The question is whether the frequency of color responses is a function of the materials or reflects a generalized preference. A number of tasks were devised to investigate this question. Watson and Shantz set up a methodological study to compare measures employed in the Shantz-Watson study to Piaget-like tasks.

Learning and cognitive growth are influenced in part by the familial experiences of the children. The family environment is complex and involves a host of variables such as interpersonal relalationships, control techniques of parents and children, expectations and aspirations among others. The common as well as special interests of the research group culminated in an extensive composite interview. This interview meets two objects, (1) a source of data to identify certain classes of antecedents for learning and cognitive growth; and (2) descriptive information about lower-class family values, organization, and structure.

Approximately 450 parents, both mothers and fathers, of middle-class and lower-class families whose children participated in the studies in learning and cognitive development were interviewed in their homes. The interview covered 122 questions requiring about two hours to administer. Thus far about 4 per cent of the initial sample either refused to be interviewed or could not be located because of leaving the area without a forwarding address. The good participation on the part of the parents in the Detroit area can be attributed to the initial approval from the appropriate Board of Education officials, highly sensitive to community problems, the cooperation of the schools in interpreting the nature of the study, preinterview letters explaining the project and introducing the interviewer going out to the respondents and to the good image of Merrill-Palmer in the community.

In Section II, the rationale for the construction and analysis of particular sections of the interview will be described and the items listed. The complete interview is presented in Appendix A.

The administration of the research program was guided by the principle of minimum administration and maximum research. The group of investigators shared some common interests, but also had individual interests. Consequently points of contact were made and followed through as commonality of interests were identified. The investigators listed reflect this.

The major integrative step is yet to be accomplished--identifying relationships between interview variables and child variables. It was not possible to do this this year, but this effort will receive priority for the 1967-68 research program. It should be noted that the freedom of investigators to pursue their own interests in the context of this common effort resulted in more cooperation than might have been expected.

# Modification of Classificatory Competence and Level of Representation among Lower-Class Negro Kindergarten Children*

Irving E. Sigel
and
Patricia Olmsted

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

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# Acknowledgment

The authors wish to acknowledge the help of many individuals in bringing this project to a successful conclusion. Our deepest thanks to Dr. Arthur Enzmann,Director, Early Childhood Education, Detroit Public Schools, for his initiating the project and enlisting the aid of the appropriate Board of Education personnel; to Mrs. Charlotte Gmeiner, Kindergarten Supervisor, Board of Education, our thanks for her wholehearted support and encouragement; to the following principals, who made the space and time for us to work with teachers available: Mrs. Ruth Pfeiffer, Bell School; Miss Elizabeth Sowell, Estabrook School; Mr. Roy Ossman, George School; Mr. Richard Blixberg, Marxhausen School; Mrs. Nona Wernette, Roosevelt School; and Mr. Sol Dunn, Assistant Principal, Bell School. To the following kindergarten teachers, whose enthusiasm, hard work and sincere dedication contributed significantly to the success of this project: Mrs. Mary Stevenson, Bell School; Mrs. Doris Rauhausen, Estabrook School, Mrs. Phyllis Kersey, George School; Mrs. Charlotte Haithman, Marxhausen School; Miss Margaret Tuovilla, Roosevelt School. To the following research assistants, who carried out the testing program: Mr. Leland Brown, Mr. Bela Feher, Mr. Gerald Huber, Miss Elizabeth Ireland, Mr. Stuart King, Mrs. Dessa Nemeth, Mr. Gary Robbins. To Mrs. Hazel McCutcheon, whose patience and skill made the completion of this project a reality.

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# Modification of Classificatory Competence and Level of Representation among Lower-Class Negro Kindergarten Children [*][†]

Irving E. Sigel
Patricia Olmsted
The Merrill-Palmer Institute

## Introduction

In two previous studies, lower-class Negro children were found to have difficulty organizing familiar three-dimensional objects into rational groupings. These children had even greater difficulty categorizing pictorial representations of these objects (Sigel, Anderson, Shapiro, 1966; Sigel, McBane, 1967). When the children do classify, they tend to group items predominantly on the basis of color. Use of such other object characteristics as form or function was relatively infrequent. The conclusion drawn from these studies was that lower-class children were deficient in classification skills, were limited in the kinds of criteria employed, and were not able to deal with representations of objects (pictures in this case) consistently with their organization of three-dimensional life-sized objects.

Such deficits are educationally dysfunctional. A host of subsequent educational experiences, ranging from mastery of subject matter areas (number, science, reading) to problem solving skills are dependent upon mastery of classificatory and representational competence. Early intervention becomes

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[*] Presented at the Sixth Work Conference on Curriculum and Teaching in Depressed Areas, Teachers College, Columbia University, June, 1967.

[†] The research reported here was supported in part by OEO Head Start Contract #542, 1965-66, OEO Head Start Subcontract #1410 with Michigan State University, 1966-67.

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a necessity in the educational experience of such disadvantaged children, thereby enabling them to enter the educational mainstream with the requirements necessary for subsequent functioning.

A review of the educational research literature reveals a relative paucity of systematic procedures aimed at intervention in the educational life of those lower-class children explicitly to facilitate classificatory and representational competence. When used, classification exercises frequently contain geometric forms which are essentially non-sense items having little relevance to everyday experience. The claim that such materials are simpler than realistic items ignores the fact that real life objects have a palpable reality, whereas geometric forms are abstractions having little realistic reference.

There is need to define the course of classificatory competence with realistic objects which form a large segment of the experiential world of the child. How he organizes objects, the criteria he employs to build such organization of objects, and the flexibility with which such organizations are built and rebuilt are issues which have been the central interest of some more recent studies (Annett, 1959; Bruner, Olver, Greenfield, 1966; Inhelder, Piaget, 1964; Sigel, 1964). These studies, however, have been limited to middle-class children. The degree to which the course of such cognitive growth is class related needs further study. Further, with few exceptions, extensive follow-up of this phenomenon has yet to be done.

## Objectives of This Study

The report to be made in this paper focuses on aspects of classificatory behavior among lower-class children. Specifically, this paper will deal with the following questions:

(1) What modes of classification are employed by lower-class Negro children when faced with arrays of three-dimensional familiar objects and with representational instances of these objects?

(2) What training procedures and what class of materials will be most effective in inducing change in classificatory and representational behaviors?

(3) If increased competence is in fact achieved, are these newly acquired skills transferred to other tasks, particularly representational kinds of behavior?

## Rationale for the Study

A pilot study demonstrated that preschool children's cognitive competence vis-a-vis classification skills can be enhanced through appropriate intervention techniques. It was found that preschool children, working in small groups (of about 6) with teachers who structured the situation so as to elicit labeling, grouping, and regrouping behavior, increased their performance in similar type tasks.

In this pilot study, the basic decision revolved around the training procedure. Analysis of classification behavior to identify processes involved in classification was done to determine which of these could be translated into sequential steps to form the basis of the teaching strategy. Such analysis led to the conclusion that categorization essentially requires a knowledge of object characteristics--observed or inferred--and the ability to perceive similarities, even in the face of apparent difference. If this awareness is not present, rudiments for building groups do not exist. To be sure, the prerequisite for these decisions is the ability to perceive the identity of objects independent of the perceiver and thereby recognize that objects have their own integrity. As a consequence, it becomes possible to group objects on the basis of objectively defined criteria and not in terms of idiosyncratic qualities. In effect, classification requires a break from an egocentric posture and a move toward objectification. Object identity is a basic requirement which, if mastered, sets the stage for analysis of object components with appropriate labeling, and finally, extracting particulars as bases for extended grouping.

Such categorization behavior is reflective of an objectification of the physical world. The criteria selected as bases for classifying can vary from objective to inferred, e.g. color, form, or class membership. Each of these is a valid and acceptable choice. But the criteria children or adults choose is indicative of a preferred mode or style. Classification behavior not only is indicative of the abilities described above, but also of the preference for particular types of attributes. This is an important distinction too often overlooked--when a child, for example, organizes objects on the basis of color or form, it does not necessarily mean he cannot use other criteria. He may just prefer "form" or "color" and deliberately or not ignore alternatives. Hence, in classification tasks, especially those allowing for open-ended grouping, it is necessary to distinguish between preference and ability (Kagan, Moss, Sigel, 1963; Kagan, Rosman, Day, Albert, Phillips, 1964; Sigel, Jarman, Hanesian, 1967).

On the basis of these considerations a training procedure was developed in which children had first to establish the identity of the object, and its manifold characteristics, e.g. a shoe was identified and defined in terms of its multiple attributes. Given such an acquaintance,new objects were introduced, defined, etc. Armed with this knowledge, the child was prepared to identify differences and similarities among objects. This type of information forms the basis for building groups.

A final consideration was how to intervene--what, in effect, is the best teaching strategy? On the basis of previous studies with different kinds of children, it was decided to use a "structured discovery" approach where the children were free to employ their verbal skills in labeling and grouping objects.

Since one of the goals of this study was to reduce dissonance between classification of the object and its representation (picture), each type of material was employed in the training--specifically, three-dimensional familiar objects and life-sized color photographs of those objects.

## Hypotheses

It was hypothesized that the type of material in the training would have differential effects on consequent grouping behavior as well as the object-picture discrepancy. Children provided with detailed exposure to the objects (OT) would increase in knowledge of the complexity of objects and would therefore have greater awareness of object characteristics. This should lead to a large repertoire of responses from which to draw in subsequent classifications. Thus, in categorizing tasks after training they would be expected to produce a larger response pool than in the pretraining testing. However, the object-picture discrepancy would be expected to increase since learning to work with representational material is not provided.

Children exposed only to pictures would be expected to increase in the kind and quality of responses. Working with two-dimensional items, these children will have relatively fewer cues available to them than children working with three-dimensional items. Consequently, children involved in the picture training condition (PT) should show minimal discrepancy between objects and pictures, having presumably learned about classification with pictures, but a lower response repertoire than children in each of the other two training groups.

The third condition, use of objects followed by pictures (OPT), should be the most effective condition since it incorporates each of the two previous procedures--allowing for opportunity to become acquainted with the object and its representation.

In sum, then, the basic hypothesis of this study is that given classification training, the most effective condition for increasing classification skills, while at the same time reducing object-picture discrepancy, will be the object-picture training condition (OPT); the next most effective in reducing the object-picture discrepancy would be the picture condition (PT), with relatively few improvement in classification skills; and the object alone condition (OT) would be expected to yield maximum gain in classification skill and least effect in reducing object-picture discrepancy.

If representational thought, however, is viewed as essentially the capacity to create mental images (verbal or pictorial) and to deal with events and objects without physical presence, role playing should facilitate the acquisition of representational thought. The exposure of children to role-playing activities and the opportunity to act out ideas may be the prelude to representational thinking. Roles as objects define aspects or functions of a person. Therefore, the awareness of the multidimensionality of individuals as of objects might be viewed as facilitating representational thought. Consequently, another training procedure will be a role-playing experience.

It might be contended that classification skills involve verbal facility. Therefore experience in language usage, with particular emphasis on talking about various matters, may be considered a particular experience that could facilitate classification skills and representational behaviors. If children are provided an opportunity to employ language in the service of communication about specific objects and events, these experiences will influence their capability in dealing with classification skills. Verbal experience might be expected to facilitate classification skills, especially the production of articulate responses. It should have more impact on classification than on reducing the object-picture discrepancy.

Now let us turn to a set of hypotheses comparing the relative significance of each of these training procedures. Three types of training procedures can be defined; one comprises the classificatory training situations which vary only in terms of the nature of the materials employed, second, role playing, and third, verbal interaction. These latter two share the commonality of not involving any explicit classification training. The expectation is that classificatory training, irrespective of modality of material involved would have more impact on classificatory behavior as well as on reduction of the object-picture discrepancy than role playing or verbal interaction. Since classification training is more directly relevant to performance on categorization tests, the training will provide the basis for generalization. The other training techniques, being more indirect, will provide some improvement, but not maximal gain.

It will be recalled that a final question posed in the previous section was the relationship between the types of training employed in this study and other tasks reflecting representational thought. The contention is that training in the verbal interaction condition and the role playing would contribute more to representational behavior than classification training. Hence it would be expected that the children receiving non-classification training experience would do better on these tasks than the children trained in classification. Of the classification trained, those children working with pictures would be more effective than those working with objects.

## Methods and Procedures

### Test Materials and Procedures

Each child was given a battery of tasks which included the Object-Picture Categorization Test, a Haptic Test, and the Motor Encoding Test (a subtest of the Illinois Test of Psycholinguistic Abilities).[*]

The Object-Picture Categorization Test is a sorting task made up of two parts, an Object Test (OCT) and a Picture Test (PCT). Twelve familiar three-dimensional, life-sized items are involved, e.g. ball, cup, spoon, etc. (See Figure 1.) In the OCT these items formthe test, while in the PCT life-sized colored pictures of these items are used.

Insert Figure 1 about here

For the OCT and the PCT identical test procedures are used. Each test involves an Active and a Passive Condition. The Active Condition task requires the child to select from an array of objects all those items he judges as similar to the stimulus object selected by the experimenter and provide a reason for his grouping. The Passive Condition requires the child to label arrays of objects made by the experimenter.[1] (See Appendix A for details of test procedures.)

The responses are scored so as to obtain three types of information; ability to group, quality of verbalization, and the basis employed in grouping.

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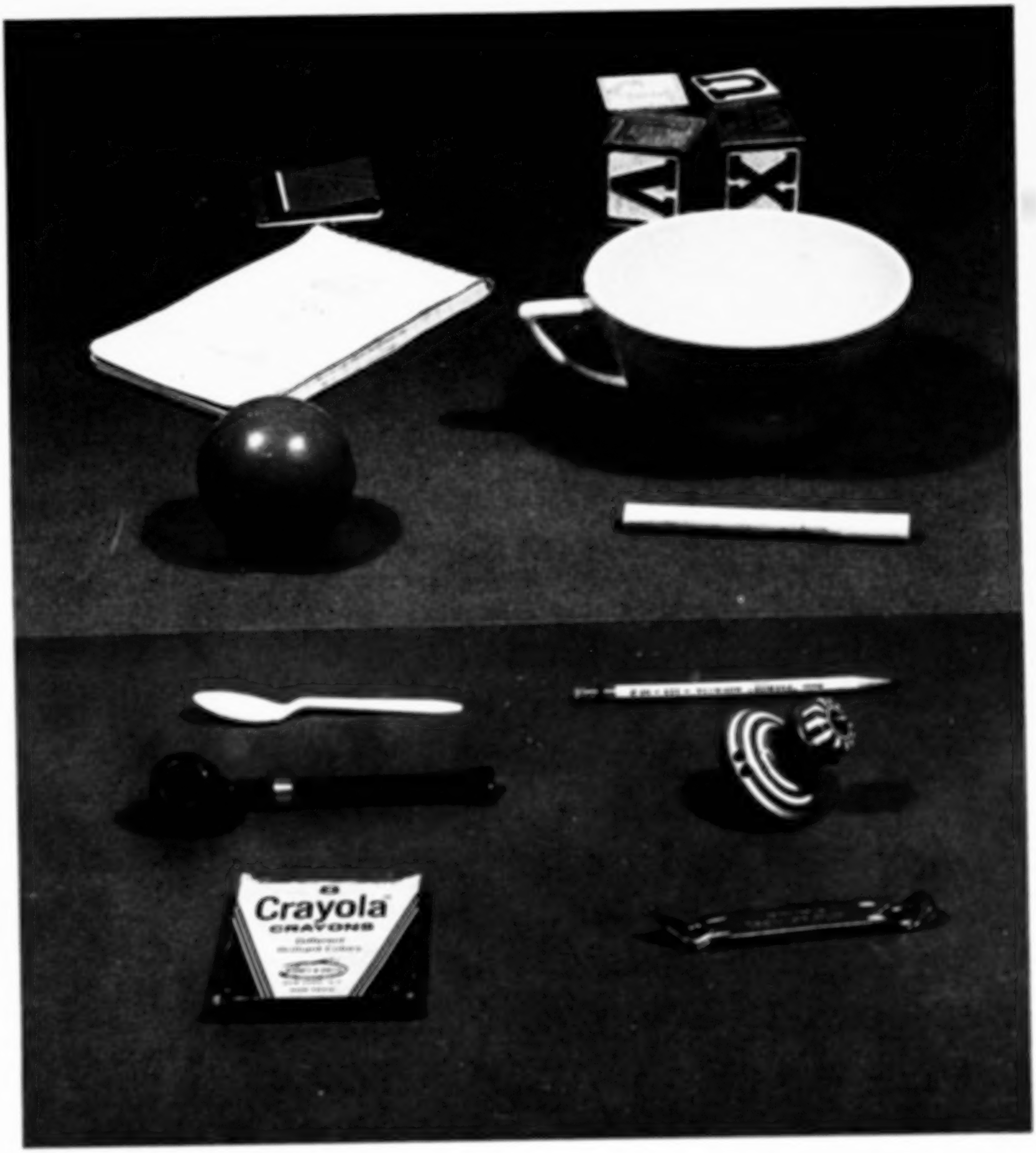
[*] The battery also included geometric preference and sorting tasks, but these are not discussed here since the results are not reported in this paper.

Fig. 1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CATEGORIZATION TEST OBJECTS

In this report, the focus will be on grouping responses, those responses giving meaningful relationships between all the items selected, and scorable responses, those in which all the items selected are not included in the answer or the relationship given is incorrect. A third emphasis will be upon the bases of grouping, i.e. the content of verbalization involving three categories as follows: descriptive, relational-contextual, and categorical-inferential.

Descriptive responses refer to those types of statements denoting physical palpable cues which are used as the basis for classification. Three types of descriptive responses exist: color, the employment of any color label; form, which refers to shape, e.g. round, straight, curved, etc.; and structure, which refers to any aspect generic or inherent in the stimulus object, e.g. legs, eyes, holding something, handles, stems, etc. This latter is in effect a generic part-whole content category, whereas color and form are attributes that may or may not be generic to the object. The color of a cup, for example, may vary, but its variability does not necessarily alter the identity of the cup; or it may vary in form, e.g. rectangular or elliptical, but it is still a cup.

Relational-contextual responses are of two types; thematic, where objects are related in terms of a story or theme or use, where objects are related in terms of their interdependent function. It is a type of chaining response, where objects are related in that specific context (e.g. a spoon and a cup are related because the spoon is used with the cup; matches and cigarette are related because the matches are used to light the cigarette.

Categorical-inferential responses refer to those which are traditionally referred to as class labels or concepts. The label refers to an array of items, which although appearing different are members of the same class. A formal definition is that for every instance of the array the class label can apply and the criterial attribute has to be inferred and is not observable. A number of sub-types of categorical-inferential exist, e.g. functional, "things you eat with," class labels, e.g. animal, furniture; single inferred attribute, e.g. living things, moving things, etc. (See Appendix A for details of scoring.)

The Haptic Test is made up of ten geometric and ten realistic objects. The aim of this task is to assess the ability of the child to identify form through tactile cues only. Seated behind a screen, the child is handed a stimulus object which he is asked to identify. Identification is assessed by having the child select the form from an array of forms. Thus the child has to translate tactile cues into perceptual recognitary ones. The accuracy in the identification task, the time taken to make the identification, as well as the kinds of searching movements used are recorded.

The Motor Encoding Task, a subtest of the Illinois Test of Psycholinguistic Abilities, requires the child to define objects in pantomime. A series of pictures are used after initially introducing the task with three-dimensional items. The score is the number of correct gestural definitions (McCarthy, Kirk, 1961).

Each child was seen twice. One of the categorization tasks was given along with the Haptic and/or Motor Encoding. About 45 - 60 minute periods were used for each child for each session.

The categorization task was the only one with possible practice effects. Thus, one half the sample received objects, followed a week later by pictures; the other half received the reverse. In posttest, the procedures were reversed, those receiving the object-picture sequence received the picture-object sequence, and similarly reversed for the picture-object sequence.

## Training Procedures

The design of the training aspect of the study is as follows: six groups of children were established, five of which were to receive the particular types of treatment briefly alluded to in the Rationale of the Study section and the sixth being a no-treatment group. The five training groups reflect each of the hypotheses in terms of effectiveness of various types of materials and are as follows: (1) the OT group of children, trained with objects alone; (2) the PT group, trained with pictures alone; (3) the OPT group, trained with objects and pictures; (4) the VI group, which contained verbal experiences, (5) the RP, role-playing, group, with children spending time in acting out real or imagined roles of inanimate objects (stop signs, posts, trees, etc.) and animate objects (human and animal); (6) the NT group, which received no additional experience.

Since the teachers were to be the trainers, it was impossible to assign children to experimental conditions. Instead schools were assigned at random to each of the five training situations. Children in NT grouping were selected from each of the schools. Each training condition was held in a separate school. Two groups of children in each school were involved, one in the morning and one in the afternoon.

Assignment and Training of Teachers. The teachers who were involved in the OT, PT, OPT, and RP groups were brought together for three training sessions. The teacher involved in the verbal interaction was not invited to participate, since the type of training involved in classification had to be kept from the VI teacher so as to be certain that verbal training did not inadvertantly include classification type activities. She was told that fluency was to be the point of her training and that the effect of fluency training on intellectual growth was the object of the study. The role-play situation was clearly prescribed and consequently this teacher could not be influenced in her actual training behavior. This actually was born out. The no-training group (NT) was made up of children who could have qualified for any of the training groups, and who were in the same classrooms with the five training teachers. These children never received any small-group interaction. There is no doubt that just being removed from the classroom might have its effect. However, the relative significance of this could be tested by comparing the VI and RP groups with the NT group. In sum, there were five training groups, three of which used classification training and two of which used different kinds of training.

The purposes of classification training were described to the teachers, who were encouraged to participate in developing the curriculum guide. The guide was then developed to provide exposure and experience in classification behavior. The guidance of the speech teacher was included because this type of training is not unlike the procedures used in speech therapy.[2] The initial training with the teachers was identical to that which they were to use with the children. The authors played the role of the teachers and the teachers were asked to play the role of the children. The teachers were encouraged to label objects, discuss them in a variety of ways, group and regroup them, and play a number of games, each of which was intended to facilitate the use of labeling behavior and perception of similarities and differences between objects and within objects. Only familiar, identifiable objects were used.

After these role-playing sessions, the teachers were asked to try a few practice sessions with the children similar to their training. The teachers were also asked to tape record the pilot sessions with the children. These were played back in the subsequent training session and discussed to insure comparability in procedure among all the teachers. Upon completion of these sessions with the teachers, the experiment was underway.

For the children, a total of 20 sessions, of approximately 15-20 minutes, for five days a week, were used. The teacher would take the children into a separate room where they worked just with these children, employing objects or pictures of the following classes of items: musical instruments, wearing apparel, containers, washing things, etc. (See Appendix C.)

In the verbal-interaction condition, the teacher was instructed to take out the relevant group of children and just read them a story, talk to them, and provide them with verbalization experience. The teacher was kept uninformed of the purposes of the experiment except to know that we were attempting to make some kind of assessment of this type of experience.

For the role-playing condition, the teacher was instructed to create stories and fantasy-type activities with familiar and even unfamiliar type settings and have the children play these out, for example, playing policeman, playing automobile, playing driving an automobile, riding in traffic, etc.

Each of the authors would, when necessary, visit the teachers, monitor the situations to answer any questions that came up. Weekly curriculum guides were presented to the teachers sufficiently in advance for them to study them before using them. (See Appendix C.)

After the 20 sessions and a delay of approximately a month, due to Christmas vacation, the children were reexamined with the categorizing test (including Active and Passive Conditions), the haptic and motor-encoding tasks, and now we included geometric, sorting and preference tasks.[3]

## Sample

The sample of children was drawn from kindergartens of representative, inner-city, lower-class schools. One hundred and seventeen children were tested. These children were all identified as lower-socio-economic class, based on school record information of parent education and occupation.

From these 117, children who produced only 50% or less grouping responses on the Object-Picture Categorizing Test (combined score) were assigned to an experimental condition. These are referred to as Low Responders (LR). Since, however, we wished to prepare for eventual attrition, and also to provide a test for style modifiability through training, a group of high responding children (HR), who produced at least 80% of their responses in one category, were included in each of the training groups. Unfortunately the number of HR and LR could not be ideally proportioned among all the groups. Distribution of HR and LR among the training groups is presented in Table 1.

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Insert Table 1 about here

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## Results

It will be recalled that previous research discovered that in classification tasks lower-class children had greater difficulty dealing with pictures as compared with three-dimensional objects. This phenomenon was reexamined in this project for two reasons, first as a replication, and second, to examine test order effects.

The total sample of 117 children was used to replicate the object-picture discrepancy issue. The analysis will be presented for a sample of boys and girls because strong sex differences were found previously.

Since test order was varied, with 31 boys getting the OCT and 29 receiving the PCT first, a comparison can be made of the relative difficulty of one task compared to another. The comparisons will be in terms of grouping and scorable responses only. Boys receiving the OCT first produced 37.6% grouping responses, whereas those receiving the PCT first produced 26.4%. The difference between the two is significant at the .001 level.

Similar results are found for scorable responses, where the boys receiving the OCT first produced 63.4% of scorable responses, compared to 49.7% for those receiving PCT first. This difference is significant, $p < .001$. These findings confirm the initial findings regarding the discrepancy in classificatory behavior between three-dimensional objects and their pictorial representation.

For girls, test order was varied, 32 getting the OCT and PCT, while for 25 it was the PCT and OCT. The results are very different. For those girls receiving the OCT first, 46.1% grouping responses are produced, whereas 54.3% occur among the girls receiving the PCT first. This difference is significant, $p < .02$. Contrary to the results with the boys, girls find it easier to work with the pictures. When it comes to scorable responses, no significant differences are found between the two tests (OCT = 70.8 and PCT = 74%).

Even though the tests were given a week apart, it is incumbent on us to determine if in fact there are any order effects. Again, the data will be examined for boys and girls separately.

For the boys who received the PCT first versus those who received it second, significant differences are found in the percentage of grouping responses, 26.4% and 46%, respectively. The difference is significant at the

.001 level. For scorable responses, the difference is even greater, 49.7% versus 71.2%. This difference is significant at the .001 level. The boys taking the PCT second do better. Why? Perhaps because of their experience with the OCT. The exposure to the OCT initially seems to facilitate performance on the PCT. Yet having the PCT first does not appear to influence performance on the OCT. No significant differences occur. The grouping scores are 36.6% on the OCT first and 42.2% second.

For girls, the results are again different. Girls receiving the PCT first do no better as far as grouping responses are concerned than when it was second, 53.6% and 54.3%, respectively. The results are similar for scorables, 80.7% and 74%, respectively. From these data, it can be seen that there is no significant change in PCT scores when preceded by OCT.

Does having the PCT first influence subsequent performance on the OCT? To determine this effect, let us compare the scores of the OCT when administered first or second. If the PCT does have an effect, the scores on the second OCT should be higher than the first OCT. Where the OCT is given first, the girls produce 46.1% grouping responses and 70.8% scorable, but when given second, 66% grouping and 84% scorable responses are given. The differences between first and second administration are significant at the .001 level, for both grouping and scorable responses. Thus, for the girls, in contrast to the boys, classification responses with objects are influenced by their contact with pictures. This is exactly the reverse of the results with the boys.

The order effect problem was handled by combining test orders across sexes, thereby counterbalancing obtained differences. In addition, for the purpose of overall analysis of training effects, where appropriate, OCT and PCT responses were combined.

## Effects of Training on the Use of Grouping Responses in the Active Condition

An initial hypothesis of this study was that grouping and scorable responses would significantly increase with CT as compared to NCT. The means and standard deviations of the grouping scores on the pre- and posttest for each condition are presented in Table 2. Analysis of the variance (one-way) reveals that significant differences exist among the LR group in the discrepancy score--the difference between pre- and posttest scores for this category. Orthogonal analysis reveals that the source of the significance is due to the difference between the combined CT and combined NCT groups ($t = 5.0$, $p < .001$). Within group analysis reveals that no significant differences occur among each of the CT groups nor among each of the NCT groups.

Insert Table 2 about here

The hypothesis that CT is more effective in inducing grouping responses than NCT is accepted; that CT would have differential effects as a function of the medium employed in the training is rejected.

In effect, significant increase in the ability to build groups and the ability to produce articulate verbalizations results from training in labeling and in classification. Verbalization experience *per se* or role playing have no more effect than no training.

## Effects of Training on the Discrepancy in Grouping Responses on OCT and PCT in the Active Condition

It will be recalled that specific hypotheses were made as to the effect of classification, verbal interaction and role-playing experience on differential responses to OCT and PCT. Chi-square analysis comparing CT to NCT, the most general situation, reveals no significant difference in the size of the discrepancy. In fact, inpection of Table 3 reveals that approximately the same percentage of children increase in the discrepancy between objects and pictures as decrease. Slightly more children do not change in the NCT group than in the CT.

Inspection of Table 3 for effects of specific experimental treatment reveals relatively little consistent effects. None of the training conditions seem to have any consistent effect in reducing the object-picture discrepancy as far as grouping responses are concerned. Each training condition, whether classificatory training or not, produces almost as much increase as decrease--the notable exception is the role-playing experience, where the majority of the children show no change. Perhaps, role playing as employed here is unrelated to the object-picture discrepancy issue. The kind of representational skills involved in the PCT may be more related to verbal type experience (CT or VI) than fantasy experience. The fact that children having no training changed at the same rate as all other groups, suggests that the changes in grouping responses may be a reflection of test reliability.*

Insert Table 3 about here

These results, in sum, lead to the rejection of the hypothesis that training experiences of the type employed here have any significant effect on the discrepancy in grouping responses between OCT and PCT. That the CT has some effect on the discrepancy between pictures and objects is noticeable, but just what the nature of that impact is is not predictable.

Since the group with no training is similar to the training groups, it may well be that training of any kind is of no more significance in influencing the size of the discrepancy between grouping responses on the OCT and PCT than no training at all.

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* Test-retest reliability coefficient for OCT is .83 and for PCT is .85.

### Effect of Training on Styles of Grouping Responses in the Active Condition

In Table 4 are presented the mean scores for each style category for each of the training groups. Examination of the pretest scores on OCT and PCT indicate that color is the most frequent criterion employed as a basis for grouping. Form and relational-contextual responses are about equal in frequency, but considerably less than color. Categorical-inferential is the least frequent.

Insert Table 4 about here

After training changes are noted. In the posttest condition, color and form responses show a marked increase for the CT trained groups with the greater increase for the OCT than the PCT. Relatively little change is noted in the other style categories.

The lower one-third of the table indicates the degree of change. The higher the score here, the greater the gains. With this in mind, it can be seen that the combined CT training groups increase more in the use of color and form grouping responses for the OCT and the PCT.

Another way of examing the effect of training is in terms of the percentage of children who change in the frequency with which they employ grouping responses within the style categories. It will be noted in Table 4a that the percentage of children employing grouping responses for each of the style categories is relatively similar with OCT and PCT. After training, for the OCT, a greater percentage of children in CT condition used grouping responses

Insert Table 4a about here

involving color and form (color from 36% to 80%; form from 20% to 48%). Less change is noted for the other style categories.

The PCT results indicate that children with classification training increased most in the use of color, followed by increase in use of relational-contextual, then form and categorical-inferential. For the NCT conditions, less increase was noted for all categories.

In sum, CT training does seem to increase the percentage of children producing grouping responses. The major increase is with children using color for both categorizing tasks. Increases in other categories are noted too. The pattern for the OCT, however, differs from the PCT.

## Effects of Training in the Use of Scorable Responses in the Active Condition

Scorable responses are those in which the child presents sufficient information for application of any one of the scoring systems but excludes from the rationale of his grouping one or more of the selected objects, or errs in the accuracy of his rationale, in contrast to grouping responses where every item has to be related accurately. Inspection of Table 5 shows that analysis of variance of change in the number of scorable responses results in

Insert Table 5 about here

a significant difference between the training groups. Orthogonal analysis reveals that the source of the significance is due to difference tetween combined CT and combined NCT groups ($t = 3.2$, $p < .005$). However, as in the case of the grouping responses, no significant differences are found within the CT groups or within the NCT groups. Thus, we can conclude that training in classification behavior increases the frequency of scorable responses. The hypothesis predicting significant differences between classification and non-classification training is supported, but as with grouping responses, the hypothesis predicting differences in effects of particular types of CT media has to be rejected.

Effects of Training on Discrepancy of Scorable Responses in the Active Condition

It was hypothesized that classification training will have a significantly greater effect on the size of the object-picture discrepancy than non-classification experience.

A significant chi square is obtained when CT and NCT groups are compared relative to an increase or decrease in the size of the discrepancy of scorable responses employed on the OCT and PCT ($X^2 = 4.4$, $p < .05$). More CT children decrease in the size of the discrepancy, thereby confirming the hypothesis (see Table 6).

The performance of the children within each experimental condition is of interest, indicating relative contribution of each condition (see Table 6).

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Insert Table 6 about here

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The table can be examined in terms of increase, decrease, or "no change" in discrepancy between the pre- and post- OCT and PCT. Each of the five experimental conditions has a different pattern.

As can be seen from Table 6, very few children increase in their object-picture discrepancy score for scorables. In fact, in the PT condition, not one child increases in size of the discrepancy. In NCT, each condition produces some increase.

Children who have had CT tend either to decrease in the size of object-picture discrepancy or show no change, whereas NCT results in inconsistency. Since decreases are relatively similar among the CT, but not among the NCT, particularly the VI and RP, it could be concluded that any of the CT conditions (objects, pictures, object-pictures) produce relatively similar outcomes. The picture condition does stand out, since, if it does have an effect, it reduces the discrepancy.

In sum, children who have experienced classification training decrease in the size of the object-picture discrepancy significantly more than NCT groups. Different trends are found among the various training procedures. With PT, the effect, *if any*, is to decrease the discrepancy.

### *Effects of Training on Styles of Scorable Responses in the Active Condition*

Table 7 reveals significant shifts among CT children in terms of *color* and *form* on the OCT and PCT, but not so dramatic among NCT.

Insert Table 7 about here

This increase is due to two factors, first, a total increase in volume of responses, and second, an increase in the *number* of children producing scorable responses. When the volume alone is examined, it is found that the proportion of each of the style types is consistent with the pretest. However, the percentage of children producing style responses within each category is greater for CT groups than for the NCT groups (see Table 8). For example, in

Insert Table 8 about here

the pretest OCT, 24% of the children used *form*, while in the posttest 52% used *form*, an increase 28%; in contrast, the NCT group increase from 12% to 28%, a change of only 16%. Similar differences are found for each of the other style categories. In effect, CT appears to increase the ability of *more* children to produce *more* scorable responses.

## Effect of Training on Variety of Styles Children Use in the Active Condition

Classification training involves experience in using a variety of criteria for building classes. The question now is, do the children in CT groups employ a wider array of styles in classification?

Chi-square analyses comparing number of children in the two training conditions using one or less and two or more style responses reveal consistent significant differences for the object condition ($X^2 = 4.36$, $p < .05$) and the picture condition ($X^2 = 11.68$, $p < .001$). In effect, there is more flexibility in employment of categories in the classification training condition than in the non-classification training condition.

Lest it be considered that this variation is a function of the low response pool of the subjects on the pretest, and thereby the so-called flexibility is in fact an artifact of the pretest level, let us examine the scores of the high responders only. The high responders, it will be recalled, are those children who in the pretest gave from 10 - 12, or approximately 80%, adequate responses, but within the same style of categorization. Analysis of the degree to which the children use more categories in the posttest condition would test the degree to which the training facilitated the use of more types of responses. The high responders who have had classification training are more variable, with 87.5% of them using two or more categories on the OCT, and 62.5% on the PCT. This is in contrast to the NCT where only 35.7% used two or more on the OCT and 35.7% on the PCT. There is more variability with this CT group than in the NCT group. In sum, classification training does affect the variability of classification criteria employed by the high responders, essentially inducing greater flexibility.

### Differences between CT and NCT Groups in Use of Grouping and Scorable Responses in the Passive Condition

Another test of the ability of the children to group and provide adequate responses is their performance on the Passive Condition. It is expected that as a function of CT training, the children would be more able to provide labeling for preconstructed groups. Table 9 indicates that CT groups did significantly better in grouping performance and scorable responses for both the object and picture conditions. Thus, we can conclude that classification training does significantly influence the grouping performance and scorable responses.

Insert Table 9 about here

### Comparison of CT and NCT Groups in Styles of Categorization Employed in the Passive Condition

In Table 10 are presented the mean number of style responses employed in the passive tests by each of the two training groups. Since this condition was administered only after training, no statements of pre-post change can be made. The CT groups employ more *form* and *color* responses than the NCT groups. It might be of interest to point out the relatively high use of *relational-contextual* responses, a result not obtained in the active sorting condition.

Insert Table 10 about here

For both training groups, the distribution of response is similar in the object and picture conditions, indicating minimal discrepancy in terms of utilization of any one of these categories. Table 11 indicates that *more* CT children use each of the style categories, whether objects or pictures are used. The frequency of use is as follows: color and relational-contextual responses, followed by form and categorical-inferential. Apparently CT enlarges the range of criteria children employ in a situation where the examiner constructs the groups.

Insert Table 11 about here

## Effect of Training on Other Types of Representational Thinking

It will be recalled that it was predicted that experience in the CT condition would in general contribute less to representational thought than NCT training. But, among the CT groups, children trained with pictures would do the best.

The results are presented in Table 12. For the Haptic Task, the CT and the NCT groups improve equally. No significant difference is found between these two groups in the amount of change pre to post. However, if each training group is examined, those children trained in the PT and OPT groups did improve, but not the VI and RP groups. The NT group also made significant gains.

Insert Table 12 about here

For the Motor Encoding Task, the results are still different. Significant changes were found for each group, CT and NCT. However, within group examination reveals that those of the CT group involved in OT and OPT did improve, while those engaged in VI and RP did also. No significant change was obtained with the PT and with the NT. Training does seem to have an effect in facilitating motor encoding behavior, but virtually each kind of training is effective.

In sum, CT and NCT groups make equally significant gains in the Haptic and Motor Encoding Tasks. Thus, for these populations, the hypothesis that CT would be less effective than NCT is rejected.

### Effect of Head Start on Classification Behavior

It was found that a number of the children had attended Head Start (HS). This provides an opportunity to determine whether this type of pre-kindergarten experience might have an influence on categorization behavior. It could be argued that the children who participated in the Head Start program would have had educational experiences relevant to classification skills and, consequently, would be more competent in producing grouping responses. Grouping responses were chosen because they are essentially classification responses, requiring the juxtaposition of objects. Comparisons of the pretest performance of the children who have had Head Start experience (HS) to those who have not (NHS) revealed that in fact the Head Start children did significantly better ($X^2 = 4.52$, $p < .05$).

Reexamination of the children in the posttest situation with the OCT and PCT revealed no significant differences in grouping responses between the HS and NHS. Thus, it can be concluded that previous experience did have an impact but that classification training as used in this study equalized the differences between the two groups.

### Sex Differences

In previous work with this categorizing task, sex differences in ability to perform were found. Consequently, it behooved us to examine the sex differences in pre- and posttest performance in order to ascertain the degree to which boys or girls differ, if at all, in their response to this training experience. Examining the discrepancy of grouping and scorable responses (i.e.

pre- to posttest), on the combined OCT and PCT, no significant difference between the sexes is found. Thus, it can be concluded that boys and girls profit equally from the training.

## Discussion

The basic intent of this study was to assess the efficacy of various training procedures to enhance classification skills and representational competence.

The results indicate that classification training does enhance the child's ability to employ grouping and scorable responses, as well as increase the variety of criteria by which to classify. Exposure to verbal experiences and role playing did not significantly alter classificatory skills.

Is the effectiveness merely a transfer effect, where the posttesting condition is very similar to the training? It should not be forgotten that the materials used in the training differed from those in the Categorizing Test. Also, the activities employed in training were very different from those in the formal test situation. Thus, the children demonstrate an ability to apply their newly acquired knowledge to a formal test situation, differing in content and task demands, attesting to their ability to generalize. This is indeed a goal of the training.

To be sure, the identical task was used in pre and post assessment. That the results obtained are not due to practice effects is demonstrated by the nonsignificant change among the non-classification training groups. The increase in grouping and scorable responses can not then be explained as a function of practice.

The results of the Passive Condition in the Categorization Tasks should also be kept in mind. Here the children were required to seek relationships of preconstructed groups. The fact that they could relate all items is an important step forward. That they used relational-contextual groupings along with color responses indicates an ability to seek out functional relationships--a criterion used infrequently in the Active Condition.

Finally, the increase in variety of styles of categorization reflects an increasing ability to employ alternatives. This move away from a limited single emphasis suggests that the children can and do seek alternatives--perhaps a step toward flexibility.

It can be concluded that the type of classification training employed in this study is a means by which classificatory skills can be induced.

Of particular interest is the fact that a guided discovery teaching strategy was used with these lower-class Negro children. Evidently they do have a repertoire from which to build. Providing them with an appropriate environment for utilizing already established skills seems to enhance acquisition of additional knowledge.

In addition to cognitive gains, the teachers report that children in the CT groups showed increased verbalization in the classroom, evidenced a more positive attitude toward school and showed greater interest in their school environment. They also asked more questions about objects and events in their surroundings. These gains were not reported by the teachers of the verbal-interaction and role-playing groups. Since all teachers appeared enthusiastic about their particular training experiences with the children, one would be hard pressed to attribute these gains solely to teacher bias.

The object-picture discrepancy is another major interest of the project. It will be recalled that no significant change in the size of this discrepancy was found for grouping responses. However, significant decreases in this discrepancy were found for scorable responses. The object-picture discrepancy referred to above is consistent with previous findings (Sigel, Anderson, Shapiro, 1966; Sigel, McBane, 1967). In view of this replication, there is little doubt as to the validity of the phenomenon.

None of the training conditions in this study, however, could significantly reduce the size of the discrepancy for grouping responses. Since the children were exposed to pictures and to objects, separately and in sequence, it was surprising to find no reduction in the discrepancy. It could be argued that the discrepancy is due to the fact that objects and pictures represent two classes of stimuli and thereby provide different sets of cues. Granting there are these differences, there is reason to expect consistency across such stimuli, particularly when they are representative of the same content. Middle-class children of preschool age do not show this discrepancy (Sigel, Anderson, Shapiro, 1966; Sigel, McBane, 1967). Also, Sigel found no difference for older lower-middle-class children (Sigel, 1953). The results of these previous studies point to the uniqueness of these findings for lower-class Negro children, suggesting the discrepancy may well be due to cognitive deficits and not to differential cues in the two sets of stimuli. For lower-class children, mode of representation makes a difference. The reason for this phenomenon is unclear, and all that can be offered at this point is speculation.

To treat objects and their representative counterparts as equivalent requires a concept of the object and an awareness that objects can be represented in any number of ways. Since the children could apply the appropriate label to the picture indicates that on the naming level the children recognize the item. Why, then, does this knowledge not permeate classification behavior? Since naming is not enough, what is? Theoretically, it can be postulated that the child does not have the schema of the object--he needs a greater range of cues in order to use the object when represented pictorially. Perhaps more salient, again theoretically, is the child's lack of competence in symbolic and representational thought in general--herein manifested in this particular set of behaviors. How significant are these types of behaviors in the lives of these children? How much symbolic and representational thought is found in their environments?

Answers to these questions may reside in further study of the symbolic environment of these children. If the adults create an environment which tends to be nonsymbolic, it is not surprising to find limited symbolic competence among the children. Examination of the linguistic environment of these children with particular emphasis on the quality of language used, may well provide some answers. This will require more details of linguistic interaction than suggested by Hess and Shipman (Hess, Shipman, 1965). One should examine the frequency with which parents employ such things as relational terms, qualifiers, referents to the non-physical. Among these may be the type of language units that are lacking in the lives of these children. But more important is the quality of even such seemingly abstract terms--are they sufficient to help foster an abstract attitude.

Search must be made of the relevant cognitive dimensions as they are embedded in a more complex personal-social system. Categorization requires an ability to objectify, to disengage relevances, etc.--behaviors closely allied to the affective domains of the person. Further, the requirement to acquire a concept of the object, thereby identifying it under various guises (pictorial, linguistic, etc.) may be a function of these larger issues.

The significance of the findings of differential classificatory behaviors with objects and pictures may rest in the identification of the broader questions regarding the requisites for dealing with symbolic materials at all levels.

It may well be that the answer lies in some integrating mechanism, the creation of organized wholes. Other training procedures than those employed here are necessary. Perhaps, with the type of classification training used in this study as a basis, additional experience indicating relationship between different forms of the same item would enhance symbolic competence.

That scorable responses increased as a consequence of training should be no surprise. The CT group did have considerable experience in labeling and giving descriptive statements about objects. This is in fact what most scorables are, posing little challenge to classification skills.

Obviously, just verbalization is not the key, since the verbal interaction group did not increase significantly in the number of scorable responses given. It apparently has to be verbal interaction in a structured context. This describes the CT condition--discovery within a predetermined system. The child had to focus on materials at hand which restricted the range of choices he had. Granted the items are complex--having multiple attributes--still there is a limited number of object characteristics. Then children then have a frame of reference within which to search. This aspect of the training should not be overlooked as a significant factor contributing to the outcomes of the study.

A number of other issues arise from this study that need further investigation. Among these are the sex difference in response patterns, the stability of the training outcomes and their relationship to other intellectual areas.

If, however, the significance of classificatory skills is granted, then this project has contributed a procedure which is practical and can be implemented in the kindergarten.

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# Footnotes

1. The Passive Condition was not used in the pretest, since in previous studies this condition was found to be too difficult (Sigel, McBane, 1967).

2. Mrs. Ralle Rothman was responsible for devising this aspect of this particular curriculum guide.

3. The data and results of this element of this study will not be included here but will be presented in another report.

## Table 1

Number of Children Included in the Different Experimental Conditions

|  | Ns |  |  |
|---|---|---|---|
| Group | LR | HR | Experimental Condition |
| CT |  |  |  |
| OT | 8 | 2 | Object Training |
| PT | 6 | 4 | Picture Training |
| OPT | 11 | 2 | Object and Picture Training |
|  | 25 | 8 |  |
| NCT |  |  |  |
| VI | 7 | 6 | Verbal Interaction |
| RP | 7 | 3 | Role Play |
| NT | 11 | 5 | No Training |
|  | 25 | 14 |  |
|  | 50 | 22 |  |

LR = Low Responder

HR = High Responder

## Table 2

### Means and Standard Deviations of the Grouping Responses for Pretest, Posttest and Pre-Posttest Discrepancy of the Low Responders in Each Experimental Condition

| Group | N | Pretest | | Posttest | | Pre-Posttest Discrepancy | |
|---|---|---|---|---|---|---|---|
| | | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| CT | | | | | | | |
| OT | 8 | 5.6 | 4.9 | 19.8 | 2.6 | 14.1 | 4.6 |
| PT | 6 | 3.0 | 2.8 | 20.2 | 3.0 | 17.2 | 5.1 |
| OPT | 11 | 4.4 | 3.6 | 19.1 | 4.6 | 14.7 | 5.0 |
| | | | | | | $\bar{X}$ 15.1 | |
| NCT | | | | | | | |
| VI | 7 | 1.9 | 2.7 | 8.9 | 9.3 | 7.0 | 9.4 |
| RP | 7 | 3.3 | 4.3 | 8.6 | 7.5 | 5.3 | 5.2 |
| NT | 11 | 7.6 | 4.1 | 12.9 | 7.1 | 5.3 | 6.8 |
| | | | | | | $\bar{X}$ 5.8 | |

### Analysis of Variance of Discrepancy in Number of Grouping Responses from Pretest to Posttest

| Source | df | MS | F | p |
|---|---|---|---|---|
| Groups | 5 | 229.0 | 5.24 | < .01 |
| Error | 44 | 43.7 | | |

## Table 3

Changes in Discrepancy between Number of Grouping Responses Given on the OCT and PCT Tests from Pretest to Posttest for Low Responders in Each Experimental Condition

| Group | Increase | Decrease | No Change |
|---|---|---|---|
| CT | | | |
| OT | 37.5 | 37.5 | 25.0 |
| PT | 33.3 | 50.0 | 16.7 |
| OPT | 36.4 | 36.4 | 27.2 |
| NCT | | | |
| VI | 42.8 | 28.6 | 28.6 |
| RP | 28.6 | 14.3 | 57.6 |
| NT | 36.4 | 36.4 | 27.2 |

Table 4

Mean Number of Grouping Responses in Each Category Style
for the Pretest, Posttest and Pre-Post Discrepancy
for the OCT and PCT Tests for Low Responders
in Each Experimental Condition

| Group | F | Co | R | Ca | F | Co | R | Ca |
|---|---|---|---|---|---|---|---|---|
| | —— Pretest OCT —— | | | | —— Pretest PCT —— | | | |
| CT | | | | | | | | |
| OT | -- | 1.4 | -- | -- | 0.2 | 3.8 | 0.1 | -- |
| PT | 0.7 | 1.2 | -- | -- | 0.2 | 0.8 | -- | 0.2 |
| OPT | 0.9 | 1.2 | 0.7 | 0.4 | 0.4 | 0.2 | 0.6 | -- |
| NCT | | | | | | | | |
| VI | -- | -- | 1.1 | 0.6 | -- | -- | 0.1 | -- |
| RP | 0.1 | 1.4 | 0.6 | 0.1 | -- | 0.7 | 0.3 | -- |
| NT | 0.9 | 2.8 | 0.1 | 0.1 | 1.4 | 1.6 | 0.1 | 0.2 |
| | —— Posttest OCT —— | | | | —— Posttest PCT —— | | | |
| CT | | | | | | | | |
| OT | 2.6 | 6.8 | 0.5 | 0.5 | 1.0 | 7.4 | 0.8 | -- |
| PT | 3.5 | 4.3 | 1.2 | 1.3 | 3.7 | 2.8 | 2.2 | 1.2 |
| OPT | 2.3 | 5.4 | 0.9 | 0.1 | 2.3 | 4.3 | 0.8 | 0.8 |
| NCT | | | | | | | | |
| VI | 1.6 | 1.0 | 1.6 | 0.4 | 1.7 | 1.0 | 1.4 | 0.1 |
| RP | 0.1 | 3.7 | 1.1 | 0.3 | -- | 2.1 | 1.1 | -- |
| NT | 2.0 | 3.0 | 0.6 | 0.6 | 2.3 | 3.2 | 1.1 | 0.1 |
| | — Discrepancy OCT — | | | | — Discrepancy PCT— | | | |
| CT | | | | | | | | |
| OT | 2.6 | 5.4 | 0.5 | 0.5 | 0.8 | 3.6 | 0.7 | -- |
| PT | 2.8 | 3.1 | 1.2 | 1.3 | 3.5 | 2.0 | 2.2 | 1.0 |
| OPT | 1.4 | 4.2 | 0.2 | -0.3 | 1.9 | 4.1 | 0.2 | 0.8 |
| NCT | | | | | | | | |
| VI | 1.6 | 1.0 | 0.5 | -0.2 | 1.7 | 1.0 | 1.3 | 0.1 |
| RP | -- | 2.3 | 0.5 | 0.2 | -- | 1.4 | 0.8 | -- |
| NT | 1.1 | 0.2 | 0.5 | 0.5 | 0.9 | 1.6 | 1.0 | -0.1 |

F = Form
Co = Color
R = Relational-Contextual
Ca = Categorical-Inferential

Table 4a

Percentage of Low Responders Using Grouping Responses for Each Style Category on the Pre- and Post- OCT and PCT Tests

(CT N = 25, NCT N = 25)

| | Pre-OCT | | Post-OCT | | Pre-PCT | | Post-PCT | |
|---|---|---|---|---|---|---|---|---|
| Style | CT | NCT | CT | NCT | CT | NCT | CT | NCT |
| Form | 20 | 12 | 48 | 24 | 16 | 16 | 32 | 20 |
| Color | 36 | 28 | 80 | 48 | 32 | 24 | 72 | 40 |
| Relational-Contextual | 16 | 20 | 28 | 28 | 16 | 16 | 36 | 20 |
| Categorical-Functional | 8 | 16 | 20 | 36 | 4 | 8 | 20 | 8 |

## Table 5

Means and Standard Deviations of the Scorable Responses
for Pretest, Posttest and Pre-Posttest Discrepancy
of the Low Responders in Each Experimental Condition

| Group | N | Pretest | | Posttest | | Pre-Posttest Discrepancy | |
|---|---|---|---|---|---|---|---|
| | | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| CT | | | | | | | |
| OT | 8 | 14.8 | 10.0 | 23.1 | 1.6 | 8.9 | 9.7 |
| PT | 6 | 11.8 | 9.4 | 24.0 | 0 | 12.2 | 9.3 |
| OPT | 11 | 13.7 | 8.3 | 23.2 | 1.0 | 9.4 | 7.8 |
| | | | | | | $\bar{X}$ 9.9 | |
| NCT | | | | | | | |
| VI | 7 | 6.0 | 7.1 | 11.9 | 10.8 | 5.9 | 7.3 |
| RP | 7 | 9.0 | 7.3 | 11.9 | 7.9 | 2.8 | 6.2 |
| NT | 11 | 15.2 | 7.7 | 15.6 | 7.7 | 0.4 | 6.2 |
| | | | | | | $\bar{X}$ 2.6 | |

Analysis of Variance of Discrepancy in Number of Scorable Responses
from Pretest to Posttest

| Source | df | MS | F | p |
|---|---|---|---|---|
| Groups | 5 | 165.8 | 2.43 | < .05 |
| Errors | 44 | 68.1 | | |

## Table 6

Changes in Discrepancy between Number of Scorable Responses Given on the OCT and PCT Tests from Pretest to Posttest for Low Responders in Each Experimental Condition

| Group | Increase | Decrease | No Change |
|---|---|---|---|
| CT | | | |
| OT | 37.5 | 50.0 | 12.5 |
| PT | 0 | 50.0 | 50.0 |
| OPT | 18.2 | 45.5 | 36.3 |
| NCT | | | |
| VI | 28.6 | 42.8 | 28.6 |
| RP | 42.9 | 14.2 | 42.9 |
| NT | 45.5 | 9.0 | 45.5 |

Table 7

Mean Number of Scorable Responses in Each Category Style
for the Pretest, Posttest and Pre-Post Discrepancy
for the OCT and PCT Tests for Low Responders
in Each Experimental Condition

| Group | F | Co | R | Ca | F | Co | R | Ca |
|---|---|---|---|---|---|---|---|---|
| | Pretest OCT | | | | Pretest PCT | | | |
| CT | | | | | | | | |
| OT | 0.8 | 3.0 | 0.4 | 0.1 | 0.4 | 5.5 | 0.2 | -- |
| PT | 1.3 | 3.7 | -- | -- | 1.5 | 3.7 | 1.5 | 0.2 |
| OPT | 1.0 | 2.2 | 2.8 | 0.4 | 0.4 | 2.0 | 2.4 | 0.3 |
| NCT | | | | | | | | |
| VI | -- | 0.1 | 3.0 | 0.6 | -- | -- | 0.6 | -- |
| RP | 0.9 | 1.6 | 2.1 | 0.1 | -- | 1.0 | 3.0 | -- |
| NT | 1.3 | 4.1 | 1.3 | 0.2 | 1.6 | 4.1 | 0.8 | 0.6 |
| | Posttest OCT | | | | Posttest PCT | | | |
| CT | | | | | | | | |
| OT | 1.4 | 8.7 | 1.0 | 0.8 | 1.0 | 8.0 | 2.1 | 0.1 |
| PT | 4.2 | 4.8 | 1.7 | 1.3 | 4.0 | 4.3 | 2.5 | 1.2 |
| OPT | 2.6 | 6.0 | 1.9 | 0.7 | 2.4 | 5.6 | 2.6 | 1.3 |
| NCT | | | | | | | | |
| VI | 1.7 | 1.3 | 3.3 | 0.4 | 1.7 | 1.0 | 2.3 | 0.1 |
| RP | 0.4 | 3.9 | 2.7 | 0.3 | -- | 2.2 | 2.4 | -- |
| NT | 2.1 | 3.5 | 0.6 | 0.8 | 2.5 | 4.1 | 1.4 | 0.2 |
| | Discrepancy OCT | | | | Discrepancy PCT | | | |
| CT | | | | | | | | |
| OT | 0.6 | 5.7 | 0.6 | 0.7 | 0.6 | 2.5 | 1.9 | 0.1 |
| PT | 2.9 | 1.1 | 1.7 | 1.3 | 2.5 | 0.6 | 1.0 | 1.0 |
| OPT | 1.6 | 3.8 | -0.9 | 0.3 | 2.0 | 3.6 | 0.2 | 1.0 |
| NCT | | | | | | | | |
| VI | 1.7 | 1.2 | 0.3 | -0.2 | 1.7 | 1.0 | 1.7 | 0.1 |
| RP | -0.5 | 2.3 | 0.6 | 0.2 | -- | 1.2 | -0.6 | -- |
| NT | 0.8 | -0.6 | -0.7 | 0.6 | 0.9 | -- | 0.6 | -0.4 |

# Table 8

Percentage of Low Responders Using Each Style Category
on the Pre- and Post- OCT and PCT Tests

(CT N = 25, NCT N = 25)

| Style | Pre-OCT | | Post-OCT | | Pre-PCT | | Post-PCT | |
|---|---|---|---|---|---|---|---|---|
| | CT | NCT | CT | NCT | CT | NCT | CT | NCT |
| Form | 24 | 12 | 52 | 28 | 24 | 16 | 40 | 20 |
| Color | 36 | 36 | 88 | 52 | 40 | 28 | 76 | 40 |
| Relational-Contextual | 36 | 40 | 40 | 36 | 28 | 40 | 44 | 40 |
| Categorical-Inferential | 12 | 20 | 36 | 36 | 12 | 8 | 32 | 12 |

## Table 9

Means and Standard Deviations of Grouping and Scorable Responses for Both Tests in the Passive Condition for Low Responders of the CT and NCT Groups

| | | UCT | | PCT | |
|---|---|---|---|---|---|
| Grouping | N | $\bar{X}$ | SD | $\bar{X}$ | SD |
| CT | 25 | 6.8 | 2.6 | 6.1 | 2.0 |
| NCT | 25 | 2.4 | 2.5 | 2.7 | 2.1 |
| Scorable | | | | | |
| CT | 25 | 11.3 | 0.3 | 11.2 | 1.3 |
| NCT | 25 | 6.4 | 5.1 | 6.1 | 5.0 |

t Values of Differences between the CT and NCT groups for Each Criterion of Each Test

| Criterion | Test | t | p |
|---|---|---|---|
| Grouping | OCT | 6.03 | < .001 |
| | PCT | 5.94 | < .001 |
| Scorable | OCT | 4.62 | < .001 |
| | PCT | 4.81 | < .001 |

## Table 10

### Mean Number of Responses in Each Style Category for the OCT and PCT Tests in the Passive Condition in Each Experimental Condition

| Group | F | Co | R | Ca | F | Co | R | Ca |
|---|---|---|---|---|---|---|---|---|
| | Grouping OCT | | | | Scorable OCT | | | |
| CT | | | | | | | | |
| OT | 0.4 | 4.7 | 0.6 | 0.4 | 0.5 | 7.1 | 2.8 | 0.7 |
| PT | 2.5 | 4.0 | 0.8 | 0.7 | 4.8 | 4.8 | 1.2 | 0.7 |
| OPT | 0.9 | 4.2 | 0.6 | 1.2 | 1.2 | 5.3 | 3.3 | 1.5 |
| NCT | | | | | | | | |
| VI | 0.8 | 0.7 | 0.8 | -- | 1.6 | 1.0 | 2.7 | 0.7 |
| RP | 0.3 | 1.3 | 0.3 | -- | 1.3 | 3.6 | 1.7 | 0.3 |
| NT | 0.4 | 1.8 | 0.4 | 0.1 | 0.7 | 3.4 | 1.6 | 0.2 |
| | Grouping PCT | | | | Scorable PCT | | | |
| CT | | | | | | | | |
| OT | 0.4 | 4.4 | 0.4 | 0.6 | 0.6 | 8.0 | 1.4 | 0.6 |
| PT | 1.5 | 2.8 | 1.0 | 0.5 | 4.3 | 4.3 | 2.2 | 0.7 |
| OPT | 0.9 | 2.7 | 1.1 | 1.7 | 1.2 | 4.1 | 3.6 | 2.5 |
| NCT | | | | | | | | |
| VI | 0.6 | 0.7 | 0.7 | 0.3 | 1.6 | 1.1 | 2.7 | 0.6 |
| RP | 0.1 | 0.6 | 0.7 | 0.1 | 0.6 | 2.0 | 2.8 | 0.3 |
| NT | 0.4 | 1.5 | 0.1 | 0.3 | 1.3 | 3.9 | 0.4 | 0.4 |

## Table 11

Percentage of Low Responders in the CT and NCT Groups
Using Each Style Category in the Passive Condition
(N = 25)

| Style | GCT-Passive |  | NCT-Passive |  |
|---|---|---|---|---|
|  | CT | NCT | CT | NCT |
| Form | 48 | 28 | 42 | 24 |
| Color | 92 | 40 | 96 | 36 |
| Relational-Contextual | 68 | 48 | 76 | 44 |
| Categorical-Inferential | 48 | 24 | 68 | 20 |

## Table 12

### Mean Change Scores for Performance on the Haptic and Motor Encoding Tests

| | Group | Haptic Test Mean Change | Sign Test |
|---|---|---|---|
| | CT | | |
| | OT | 0.8 | NS |
| | PT | 2.8 | .02 |
| | OPT | 1.1 | .02 |
| | NCT | | |
| | VI | 0.9 | NS |
| | RP | 0.9 | NS |
| | NT | 3.8 | .005 |
| CT | $p < .001$ | | |
| NCT | $p < .05$ | | |
| Total Sample | $p < .001$ | | |
| | | Motor Encoding Test | |
| | CT | | |
| | OT | 3.1 | .04 |
| | PT | 1.2 | NS |
| | OPT | 3.9 | .001 |
| | NCT | | |
| | VI | 2.1 | .01 |
| | RP | 3.0 | .002 |
| | NT | 1.6 | NS |
| CT | $p < .001$ | | |
| NCT | $p < .001$ | | |
| Total Sample | $p < .001$ | | |

## Appendix A

## Administration of Categorizing Test

Materials:

(In order of presentation to the child)

| | | | |
|---|---|---|---|
| (1) MATCHES (M) | (2) BLOCKS (B1) | (3) SPOON (S) | (4) PENCIL (Pe) |
| (8) NOTEBOOK (NB) | (7) CUP (C) | (6) PIPE (Pi) | (5) TOP (T) |
| (9) BALL (B) | (10) CIGARETTES (Ci) | (11) CRAYONS (Cr) | (12) BOTTLE OPENER (BO) |

A set of colored pictures of these same twelve objects (presented in the same order).

Procedure:

I. Identification Task:

A. Say to the child: "I have some things here than I am going to put on the table. Tell me what they are."

The objects (or pictures) are placed in front of the child in the order indicated above, the matches in the upper left hand corner of the child's view. The name that the child uses is written on the answer sheet. If the child cannot give you a name, ask him to describe what it does or how it is used, and record the description. Do not give the child a label if he lacks one. If he gives the correct label you may just make a check mark.

II. Active Sort:

A. Pick out the pencil from the array (leaving the other items in the above order), put it over to the side and say to the child:

a. "Look at all these (indicate total array of objects or pictures) and put over here the ones that are the same or like this one."

Circle on the score sheet the items that the child selects, and ask him:

"Why are these the same or alike?"

Record the answer verbatim, and put an "a" to indicate he responded to Question a.

If child does not respond to the above (a.), say:

b. "Look at all these and pick out the ones that belong with this one."

Circle the items he selects and ask:

"Why do these belong together?"

Record his answer and indicate that he responded to Question b.

If child does not respond to the above (b.), say:

c. "Put over here the ones that do with this one."

Circle the items he selects and ask:

"Why do these go together?"

Record his answer and indicate that he responded to Question c.

Return the pencil to the array and repeat the procedure with the ball.

Continue this procedure for the 10 remaining items in the following order: Cigarette, crayons, bottle opener, top, pipe, cup, notebook, matches, blocks, spoon. (You will note that the order for the 12 items is upper right to lower left, through the lower right, then middle right to middle left, then upper left to pencil.)

On the first two items (Pencil and Ball) if the child picks one item E should ask: "Are there any other?" If the child does not respond he is encouraged with: "See if you can't find something here (pointing to the array) that is like (belongs with, goes with) this one. (Pause) Go ahead, pick one." If these prompts are used, note it in the answer space.

After the first two items just accept whatever the child says, including "don't know" or "nothing." The one exception to this is if the child responds with an association to an item which is not present, e.g. if he says "goes with beer" when the bottle opener is the stimuli. In that case you may ask: "Do any of these?"

III. Passive Sort:

A. After the child is questioned on all twelve objects (and they are again in the original order) E selects out three items (see score sheet for items and order) and asks:

a. "Tell me how these three are the same or alike."

If no response then E asks:

b. "Tell me how these three belong together."

If no response then E asks:

c. "Why do these three go together?"

Record the child's answer verbatim. If he uses only 1 or 2 of the items given him, be sure to indicate which ones he is talking about.

## Scoring Manual -- Categorizing Test

General Rules:

(1) NOTE: Remember to check to make sure that responses are correctly recorded and make sure that the stimulus is not also counted as an item selected.

(2) If two verbal responses to a given sort of stimuli are equally good, but different, use the first. Always score the highest possible of multiple responses.

(3) If the child initially mislabels an item and consistently uses that label, accept it and score his responses within the context of that label: e.g., if he calls the top a sharpener and selects the pencil to go with it, saying that you sharpen the pencil with it, score as appropriate R-F. Only initial unusual labels are accepted.

Each response made by the subject will be scored for two aspects, the verbal level of the response and the type of classification used.

Verbal Level:

Grouping Responses:

Grouping responses are those in which a meaningful relationship between all of the items grouped is given. There are three types:

1) Appropriate --All items sorted from the stimulus array must be included in a fully articulated response. A fully articulated response must include a categorical label or the labels of all items included in the sort together with a connecting relational or functional verb. A pronoun will be accepted as a substitute for the item label(s) if the referent of the pronoun is unequivocal: e.g., "they are all yellow."

2) Additional --If the child gives a verbal response which does not fulfill the criteria for full articulation, but through implication expresses a unifying concept, score as an Additional. Such implications may be assumed when a single verb represents the function of all the items. When the action attributed to one of the items needs, or is commonly associated with, the presence of the other item(s) for its execution, the implication of a relationship may be assumed since the child has selected these items from the matrix. Further implication may be assumed when the cue is non-verbal, that is, when the basis for categorization is not clearly verbalized but only clarified by the use of gestures.

3) Labeling Error--Here the child has made a grouping of items which are, in fact, similar, but gives the incorrect label for the grouping: e.g., puts blue items together and says, "they are all yellow."

Nongrouping Responses:

Nongrouping responses are those in which an answer is given and its meaning is clear but it does not meet the task requirements. There are five types:

1) Partial and Disjunctive 2 --Of the items sorted, if one, or more, is not included either in the verbal response or through pointing, then score the response as a partial.

Disjunctive 2s are responses in which the subject uses at least one basis of categorization which has two or more items contained in it and other bases for the remaining items. Thus, DJ 2s are responses which consist of two or more smaller groupings of the items chosen.

2) Disjunctive 1 --Here the child assigns a different attribute, use, or owner to two or more of the objects picked: e.g., "you play with the blocks, smoke a cigarette and drink from the cup," or "this is yellow, this is white, this is blue."

When items have a common cultural usage, e.g., matches and pipe, but the verbal response clearly indicates a separate function (matches are for lighting, pipe is for smoking) then the response is not scored as Additional, but as Disjunctive 1.

Also, responses which show an associative difference between two or more items (this is blue and that is not blue, or this is taller than that) should be coded here.

3) Single Associations --Single associations are responses in which the subject gives a reasonable appropriate association or an aside to just one item selected: e.g., "my mother has a bottle opener" when the stimuli are the opener, the cup and the spoon.

For 1) and 2) above, when more than one classification category is used in the response, use the category given first.

4) Grouping Error--Grouping errors are erroneous verbalizations, e.g., "they're made out of sponge" or "white" when they are not.

| | | |
|---|---|---|
| 5) | Irrelevant and Idiosyncratic | --These responses include such things as (1) color responses using the backgrounds or shadows of the stimuli, (2) contextual groupings which are merely piling: e.g., "put the ball in the cup," or "put the pipe on the blocks," and (3) thematic response where the items are related in a story but not in any meaningful way. |

Scorable Responses:

Scorable responses include grouping responses and nongrouping responses.

Nonscorable Responses:

Nonscorable responses are those in which an answer is not given or is not clear enough to score. There are two types:

| | | |
|---|---|---|
| 1) | Insufficient information | --This category includes the following:<br>(1) Subject gives a response, but not enough to know what he means: e.g. "these are big," used indiscriminately,<br>(2) subject merely names the objects,<br>(3) subject says, "I don't know," and<br>(4) subject merely repeats or paraphrases the question: e.g. "they are the same," or "they belong together." |
| 2) | No Choice | --The subject selects no item to do with the stimulus. |

Classification:

All grouping and nongrouping responses of the child are scored in one of the four categories following:

| | | |
|---|---|---|
| 1) | Descriptive | --Organization of the stimuli on the basis of perceptual physical properties is scored as a descriptive response. |
| | form | --The use of measurement or shape properties, such as round, flat, long, small, fat, corners, is scored as a form response: e.g. "they are all long." |
| | color | --Use of a color label, or saying "same color" is scored as a color response. |
| | structure | --Designation of specific intrinsic or inherent parts or properties such as metal, wood, having writing on them, having similar parts like handles, knobs, etc., is a structure response. |
| 2) | Relational | --Responses in which the stimuli are organized as interacting with each other or being found in the same context are scored as relational. |

functional --When the action of the functional relation takes place directly between the items in a given sort, then the response is recorded as relational-functional: e.g. "light the cigarette with the matches."

thematic --When the action of the functional-relation between the items in a given sort takes place on an imported item, then the response is recorded as relational-thematic: e.g. "open the pop with the bottle opener and drink it out of the cup."
Also code as thematic those responses in which the objects are related in story sequence but their function is not otherwise interrelated: e.g. "smoke a cigarette while you drink a cup of coffee."

contextual --In responses where objects are solely grouped because they are found in the same location, or belong to the same person, score contextual: e.g. "my daddy has those," or "they are in the kitchen."

3) Categorical --Organization of the stimuli on the basis of common class membership, including atypical class membership is the basis for a categorical score.

low functional--One object or picture is chosen to be with the stimuli because both are used for the same purpose: e.g. "you write with them," or "you play with them," or inferred action properties such as rolling or spinning.

high functional--Two or more objects or pictures are chosen to go with the stimuli because all are used for the same purpose or inferred action properties such as rolling or spinning.

class label --One term is used to define two or more items included in the class: e.g. "toys," or "kitchen things," or "writing things."

4) Unusual/None --Grouping and nongrouping responses are scored here if the basis of relationship is unusual: e.g. "smash the cigarette with the blocks." All nonscorable responses are placed in this category also.

## Descriptive-Form:

The following adjectives are considered to accurately describe the form of the object:

Matches................Flat,* straight, square, corners

Blocks.................Flat,* straight, square, corner, round,** fat***

Spoon..................Flat,*(Handle), straight (handle), round (bowl)

Pencil.................Long, round, straight, pointed, flat*

Top....................Round, fat

Pipe...................Round, flat,* straight, long

Cup....................Round, fat

Notebook...............Flat,* square, corners, straight, long

Ball...................Round, fat

Cigarettes.............Round, long, straight, flat*

Crayons................Flat,* square, corners, long, straight

Bottle opener..........Flat,* long, pointed, straight, round

* Flat may be taken to mean either:
a) a flat surface, or
b) a lack of height

Pointing is necessary to indicate flatness meaning resting on a surface.

** Pointing to the round letters on the blocks is necessary to indicate roundness.

*** Fat may be taken to mean massive or having height and width.

Sigel
Olmsted

MP 10/11/66

## Appendix B

## HAPTIC TASK
## Instructions

1. Demonstrate curtain to child by rotating it, indicating it is merely a screen.

2. Place screen on table so that child can completely extend his hands through curtain. Lift up curtain to show child there is nothing on the other side.

3. With curtain down, tell child to put hands through screen. As you place the airplane in his right hand, say:

   "I am putting something in your hand. Feel it all over because I will want to find out if you know what it is. When you think you know what you are feeling, say, 'Ready.'"

4. Remove object after child says, "Ready," but do not show it to him. Now say:

   "Tell me what you were feeling."

   After he replies, show him the airplane.

5. Now say:

   "We are going to play a game feeling more things. Place your hands under the curtain."

   As he does this, say:

   "I am going to put something else in your hands, and feel it all over. When you think you know what it is, say, 'Ready.'"

5a. Time the latency between presentation of the object and the child's statement of ready.

5b. Be sure to always place object in the right hand.

6. Note how child handles object behind the curtain. The following categories will be used:
   - a. HOLDING: Simply grasps in one or both hands, but no movements.
   - b. TURNING: Rotates in one or both hands.
   - c. EDGING: Runs one or both hands at least 1/2 way about object.
   - d. TOTAL: Tries to discover all the features of object--sides, number of points, etc.

   Place appropriate letter of type of behavior in answer box.

7. After child indicates he is ready, remove object, and say (as you bring out either the placard or the object):

   "I am going to show you some ________ (pictures) or (things). Point to the one just like the one you were just feeling behind the curtain."

8. Check box indicating choice. Now say:

   "Let's go on to another."

9. Repeat procedure with remaining nineteen items.

Thank you.

## Appendix C

# Teaching Procedures in the Concept of the Object and Classificatory Competence[*]

Irving Sigel
Patricia Olmsted
The Merrill-Palmer Institute

The aim is to enable the children to label the object, the constructural and functional properties, and the class membership, and to help develop skills in classification and categorization.

The teacher's goal is to help the child become aware of the many characteristics of each item, to learn that objects are similar or different on the basis of any one or more characteristics, and that since there are many ways to classify, there is *no one* right way.

Even though there are many *right* ways, there are ways which are indicative of (1) no awareness of classification; (2) some awareness, but where groupings are idiosyncratic and do not reflect logical or communicable orderings; a group selected and the child says, "I don't know," or "I wanted to," etc.--these kinds of collections are indicative of a lack on the part of the child to deal with objects objectively; (3) awareness of groupings and an apparent, deliberate, planned organization; (3a) no verbalization but communicable gestures; (3b) the ability to express a rationale for the collection verbally.

Children at any level may make certain errors in labeling items, and we must distinguish between such errors, e.g. calling red green, or other misnaming, and inaccuracy due to apparent information deficit. These should be distinguished from inability to grasp the process of grouping and viewing reproduction with "objectivity."

In this experiment, the major aim is to test the impact of particular training procedures in increasing classificatory skills by helping the child realize objects are complex and can be viewed from a number of points of view.

---

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One way objects are represented is as pictures--signs of the objects. The discovery that lower-class children had difficulties in treating pictures as signs of objects, suggested a difficulty in representational behavior--a finding supported by other studies. These children were found to have difficulty in other areas requiring representational ability, e.g. abstracting, pretending, in effect--in imagery in general.

In our view the two intellectual activities of classification and representational thought are interdependent, since classification requires analysis of the observable, inferences about possible relationships between items, and constructing integrated relationships in larger categories.

To "know" an object in order to form these categories, the object should be recognized in its three-dimensional form or pictorial representations of it.

To provide the child with situations in which he will get to know the object in the sense described above requires motoric and linguistic experiences with objects; motoric in terms of knowing how it feels, what it does, and what can be done to it--a hammer is used to pound things and to use a hammer there are a number of necessary motoric acts. The child has to learn to name the object and its relevant characteristics. Once he has accomplished these tasks, he is now assumed to be capable of dealing with the object in its various guises and forms.

These then are the goals of this study. Since we are not certain what the best ways are to accomplish the goals, we are establishing a series of training procedures to test the efficacy of a number of training techniques. Three of these procedures involve training in identifying the extrinsic and intrinsic functions of objects, labels for various attributes, and perceiving similarities and differences among objects as bases of classification.

The three procedures dealing directly with object identification and classification are involved in the following three experimental conditions:

1. Object condition
2. Picture condition
3. Object-picture condition

For each of the three conditions, items (objects and/or pictures) will be identified, attributes labeled, and functions expressed motorically and verbally. Thus, for example, if a pen were introduced, it would be labeled "pen"; it would be described by attribute labeling, e.g. color, size, texture, shape, etc.; by function, motoric, e.g. holding pen in writing position, writing with it; and verbal description of actions, i.e. you write with it, you carry it, etc.; by class membership, e.g. writing things, tools, etc.

The only difference with the picture condition is that actions will have to be pantomimed, pretending the object is being handled. The verbal conditions are the same as in the object condition.

There are two parts to the training in the object-picture condition; first, objects are discussed, and then, pictures of these objects are used. Only half of the items used in the other two conditions are included in this one.

In sum, the experiment is aimed at determining the most effective intervention procedure for increasing knowledge of the objects and competence in classification.

## Section II

Materials:

The materials used in the object and/or picture training conditions are realistic three-dimensional items and photographs of them. The items can be most simply and obviously identified with the following class labels: wearing, musical instruments, containers, washing, fasteners.

Many other categories can be created from these materials and by the end of the training no doubt many different categories will be developed by regrouping the materials.

The list of items follows:

Object Condition and Picture Condition

Wearing: Shoe, shirt, sock, tie, hat, glove, watch, bracelet, umbrella, belt;
Musical instruments: Bell, drum, maracas, accordian;
Containers: Can, drinking glass, box, glass jar with lid, wallet;
Washing: Towel, sponge, soap, soap dish;
Fasteners: Zipper, button, safety pin, clothes pin;
Miscellaneous: Flashlight, eye glasses, mirror, a quarter, scissors.

Object-Picture Condition

Wearing: Shoe, shirt, glove, bracelet, belt;
Musical instruments: Bell, maracas;
Containers: Box, glass jar with lid, wallet;
Washing: Towel, sponge;
Fasteners: Zipper, button, safety pin;
Miscellaneous: Scissors.

## Section III

A. General principles:

1. Sessions should be teacher guided to allow for spontaneous verbalizations.
2. All categorical responses should be accepted. If in error, have the children correct if possible. If not, query children to elicit corrections by child where possible. Do not show preference for one response over others.
3. Follow order of introduction of materials to keep sessions in different schools compatible.
4. Questions to be covered as objects are presented:
   (1) What do you call it?
   (2) What does it look like?
   (3) What do you do with it? ...to it?
   (4) What other things are like it?
5. Prior to formal grouping, search tasks:--searching for similarities and differences will be guided by teacher by requests to discover common characteristics, e.g. all red, all soft, all cloth, etc. This is a search for similarities. Also search for comparisons, e.g. all red ones here, all green ones here, etc.
   The goal is to have the child discover (through search and discovery) the common attributes, build groups, then rebuild them. In this way the child will learn that the same object can belong to different groups--each of them correct.
6. Spontaneous grouping games should be used in which the child is asked to put out "those things that are alike or go together."

Reasons should be elicited with the rest of the children joining in when possible to (1) verify, (2) elaborate if possible. Whenever this is done, accept statements from all. Try to let group do the verification through confrontation.

## Probe Questions

What do we call this?
What do you call it?
What color is it?
What is it made of?
Where does it come from?
Where do you find it?
What does it look like?
Who uses it?
How does he (she) use it?
What can you do with this?
Show me how you use it.
Show me what you do with it.
Child acts out with it.

## Category 1 -- Wearing *

1. Present shoe to group
2. Identification:
    Who knows what this is?
    If correct, say, "Yes, this is a shoe."
    If incorrect, say, "This is called a shoe."
    Whether correct or incorrect, after term is used, ask each child to say, "It is a shoe."
3. Be certain each child knows name, say, "Now we will talk about the shoe. What can you tell me about the shoe?" (Here the goal is to obtain attributes as follows:

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*The following procedures are for the object condition and picture condition. The same procedures apply for the items of the object-picture condition.

(1) brown (color)
(2) wear it (function)
(3) has laces, heels, soles, etc. (structure)
(4) is leather (material)
(5) for boys (relational)
(6) buy it in store (relational)

Actions of two types:
  (1) What the object does--bend it
  (2) What can be done to object--wear it, carry it, fill it, etc.

4. After attributes and actions are identified, compare shoe to children's shoes, teacher's shoes--pointing out differences and similarities. Goal here is to allow for comparison to other items in the class (teacher's shoes, children's shoes). Allow each child to participate.
5. After you feel children have completed "shoe", remove and bring in shirt. Repeat procedure in steps 2, and 4, but for 3 introduce with question, "What do we do with this?" The aim is not always to introduce items by descriptive terms. The point is to avoid a particular set or order, but get the point across that a variety of characteristics can be emphasized.
6. Bring shoe back and now identify differences and similarities between shoe and shirt. In this case attributes, functions, actions are to be viewed comparatively, e.g. difference, shoe brown, shirt blue; similar, wear both.
7. After these have been investigated, remove objects and introduce sock. Repeat steps 2, 3, 4.
8. Remove sock and introduce tie. Repeat steps 2, 3, 4.
9. Bring sock and tie back, repeat step 6--comparison.
10. Bring back shoe, shirt, sock, and tie. When returning each item to table ask children to name each item as it is being introduced.
11. With four objects now on the table emphasis should be on grouping items in pairs, starting with simplest attribute--color. Put out the ones that are "red." Pick out the ones that are "blue." Reorganize these two subcategories so that now shirt and shoe can be grouped and sock and tie. Regroup so that all four can be grouped. Do not exhaust all possibilities, yet be certain children know at least 2 ways all four can be classified.

12. Remove all these items, and introduce hat and glove together. Now each item will be described singly and together, e.g.
    a. Name: hat, cap
    b. Name: glove
    c. How similar? What do you do with these when you wear them? (seasonal)
13. Now introduce all items heretofore used, a total of 6.

    During this period change pace with increased games:
    (1) Hidden game
    (2) Show and tell

    (Here we shall work out with teacher)
14. After classes have been combined and recombined, attributes identified, etc., all objects are still on table, the watch is brought out and the child is asked, "What is this? Does it go with anything here?" Goal here is to see how the child relates a difficult yet relevant item to any one or more (can use sub-groups, etc.). After the watch, introduce bracelet, belt, and finally umbrella.

    After umbrella, all items should be on the table. Some additional grouping games can be played.

### Category 2 -- Musical Instruments

1. Present maraca to group
2. Identification:
    a. Pass object or picture to each child to examine before asking probe questions.
    b. Ask, "What is this called?"
    Have each child say the name. (May call it a "shaker" or some other names suggested by the children.) Teacher should supply the correct name but continue to accept child's term.
3. "Now we will talk about the maraca. What can you tell me about the maraca?" Possible attributes (not a complete list):
    (1) blue or green (color)
    (2) makes noise (function)

(3) has handle (structure)
(4) is wood (material)
(5) but it in a store (relational)
Action with the objects.

4. Bring back bracelet, umbrella and watch and identify differences and similarities.
5. Remove bracelet, umbrella and watch. Allow maraca to remain.
6. Introduce bell, drum and accordian together. Discuss the items singly and together (see item 12, page 7).
7. Group and regroup with all four musical instruments.
8. Suggested activities and games with the musical instruments:
    (1) Explore the noises these instruments can make. Have children close eyes, teacher or one of children plays instruments. This may be done with the pictures by imitating the sounds orally, but all must agree on sounds before playing the game.
    (2) Select a child to tell or pantomime a way in which the object (or picture) might be handled or used. Accept many ways in addition to the obvious ones such as beating drum, ringing bell. For instance, a child may indicate shape or size with his hands or may try to "look like" the object itself through whole body movement.

### Category 3 -- Containers

1. Present can, glass and jar together.
    a. Name objects.
2. Attributes:
    a. What is it made of? How does it feel?
    b. What can you do with it?
        1) Try to include sounds (carry-over from musical instruments)
        Example: Tap objects with finger or against each other. Speak into object.
        With pictures--discuss possible noises or sounds objects might make.
    c. How can you use it?
    d. What could you put into it?

3. Differences and similarities
    a. All containers
    b. Jar and glass are glass. Lid and can are metal, etc.
    c. Shape
    d. Size
4. Set aside can, glass and jar, but do not remove from view. Bring in box and wallet.
5. Follow steps 2 qnd 3 above.
6. Return all 5 objects and classify as previously.
    a. Game suggestions:
        1) Have child pantomime use of an object while others guess
        2) Teacher removes two objects while children have eyes closed. Children recall the missing objects.
    b. Ask children to tell how they might use any 2 objects together or successively. Let child choose the objects he wishes to tell about.
    Examples:
        1) Pour something from jar or can into glass.
        2) Put wallet into box.
        3) Take wallet to the store and buy can of juice.

### Categories 1 & 3 -- Wearing and Containers

1. Present can, glass, box, jar, wallet, shirt, shoe, watch, tie.
2. Have children briefly recall some of the discussion about these objects.
3. Classify as before.
    a. May bring in more difficult concepts in addition to those which children suggest.
    Examples:
        1) Pick out all things with metal on them--lid, watch, tie, shoe lace holes
        2) Pick out all breakable things. Have children describe how things might break.

## Category 4 -- Washing

1. Introduce towel, sponge and soap
    a. Name objects
    b. Investigate objects singly and together. Pass them.
2. Discuss attributes
    a. What does it feel like? -- hard, soft, smooth, rough, etc.
    b. What is it made of? (Possibility of children bringing up real sponges. This one is cellulose.)
    c. Where could you find it?
    d. How could you use it?
    e. Color
    f. Shape
3. Before classifying, bring in soap dish (apt to be less familiar to children). Follow steps 1 and 2.
4. Put all objects together and classify--differences and similarities.
    a. Shape--towel, sponge and soap dish are rectangular, (soap?)
5. When children are completely familiar with objects remove them or, for pictures, turn them over. Ask children to close eyes and "see a picture in their heads" of one of the objects. Children describe these things--color, size, what were you doing with it, etc.
6. How could you use any two or three objects together or successively?
    a. Example: Put soap in soap dish or wash with soap, then dry with towel.

## Categories 3 & 4 -- Washing and Containers

1. Before displaying objects or pictures, ask children if they can remember those shown yesterday or the day before. As they name them put objects on table. If they cannot recall all of them, teacher may add one at a time asking children to name them as she does so.
2. Have children recall briefly some of the previous discussion about these objects.
3. Classification
    a. Group and regroup
        1) Keep probing for additional differences and similarities beyond those obvious to children.

Example: Towel could become a container by wrapping something in it.
Or: Glass, jar, wallet, soap and soap dish all feel smooth.

4. Other activities:
    a. Each child selects an object or picture and holds it under the table. He describes it and the teacher tries to guess which one he has.

### Category 5 -- Fasteners

1. Introduce zipper and safety pin
    a. Name objects
    b. Pass to children
2. Discuss attributes
    a. Where do you find it?
    b. What color is it?
    c. What is it made of?
    d. What does it feel like?
    e. What does it look like?
    f. What can you do with it?
    g. Try to include sounds, e.g. click of zipper or pin, snap of clothespin.
3. Remove zipper and safety pin. Present button and clothespin.
4. Follow steps 1 and 2.
5. Bring back zipper and safety pin with button and clothespin.
6. Classify
    a. Differences and similarities
    b. Group and regroup
        1) Suggestions: Zipper, pin and clothespin all have metal.
        Clothespin and button are plastic.
        All are fasteners.
        All open and close, etc.
7. Activities:
    a. Rearrangements
    After children have grouped objects, have them close their eyes while teacher removes one item from group or changes the arrangement by moving one or two objects. Children open eyes and teacher asks, "How was it changed?"

b. Using button and zipper and perhaps safety pin: Child chooses an object (Example: zipper) and presents it to another child who is wearing something similar (Example: skirt with zipper). Child tells about what he is doing (Example: "I'll give the zipper to Nancy because she has a zipper on her skirt.")

### Categories 2 & 5 -- Musical Instruments and Fasteners

1. Present safety pin, zipper, accordian, and bell.
    a. Name objects.
2. Have children briefly recall some of the discussion about these objects.
3. Classification
    a. Differences and similarities
    b. Group and regroup
        1) All have moving parts
        2) Pin, zipper and accordian can be opened or closed
        3) Pin, zipper and bell all have metal, etc.
4. Bring in drum, maracas, button and clothespin.
5. Follow steps 1 and 2.
6. Working with all 8 objects, follow step 3.
7. Activities:
    a. Larger and smaller:
        1) Child selects one object and compares it to others. He says, "The drum is larger (or bigger) than the button." He may try to find as many objects as he can which are smaller or larger than the one he has chosen.
    b. Remove all objects or pictures from view. Ask child to describe by recall one of the objects. Others guess which one he is describing. The child who guesses then gets to hold the object or picture. Children take turns.

### Category 6 -- Miscellaneous

1. Present scissors
    a. Identification
    b. Permit children to pass scissors from one to another.

1) Attribute of sharpness may be brought out here. Ask children to suggest a good way to pass or handle scissors. Ask why they suggest a particular way.

For objects: It is important that the children know from the beginning that the scissors are quite sharp so that they will handle them safely. Do not insist that they hold them in any particular way since this would limit investigation. However, if they are aware that they might get hurt or hurt someone else, they will handle them more carefully.

2. Attributes
    - a. What does it do?
    - b. How could you use it?
    - c. Who else might use it?
    - d. What is it made of?
    - e. Color?
    - f. How does it feel?
    - g. Where can you find it?
3. Set scissors aside but remaining in view.
4. Bring in flashlight, eye glasses and quarter.
5. Follow steps 1 and 2. Discuss items singly and together.
6. Return scissors to group.
7. Classification (may be more difficult than previously because of miscellaneous category).
    - a. Differences and similarities
    - b. Group and regroup
        - 1) Suggestions:
            - a) Glasses and flashlight both have glass and plastic.
            - b) Flashlight, quarter and scissors are silver, metal.
            - c) Flashlight, quarter, glasses and scissors have round parts.
            - d) All but quarter have movable parts.
8. Activities:
    - a. Pantomime: A child pantomimes use of object while others guess what it is.
    - b. Ask child to select an object or picture and describe a situation in which he might need it. Have him tell how he would use it. Example: "If I wanted some candy, I could buy it with the quarter."

c. Over and under: Child selects an object and holds it over or places it beneath another object. Then he says, for example, "The scissors are over the flashlight."

Categories 1, 2 & 4 -- Wearing, Musical Instruments and Washing

(not previously combined 19 items)

1. Put objects or pictures on table one at a time but mix up the categories, e.g. vary the order of presentation of objects, choosing one from category 2, then one from category 4, then one from category 1, for example.
2. As each one is presented have the children name it.
3. With all items on the table classify as before.
r. Activities:
   a. Ask one child to select 3 objects which might belong together and have him tell why. Accept any reasonable answer. Example: shape, color, use, etc.
   b. Ask children to pick out as many objects as they can find which have red on them. Do the same with other colors.

Categories 3, 5 & 6 -- Containers, Fasteners and Miscellaneous

(not previously combined 13 items)

1. Follow steps 1, 2 and 3 of previous lesson (categories 1, 2 & 4).
2. Activities:
   a. Ask children to close their eyes. Remove two or three objects. Children tell which are missing.
   b. Ask children to select all objects with metal on them. Do the same for glass, plastic, etc.

# Study 2: Developmental Studies of Egocentrism:

## I. Violation of Expectancies *

Carolyn U. Shantz

John S. Watson

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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# Study 2: Developmental Studies of Egocentrism:

## I. Violation of Expectancies *

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Egocentrism is defined by Piaget as the child's inability to adopt a point of view different from his own. Such subjectivity limits the child's understanding of events and relationships among events. For example, the young child has difficulty engaging in true discussion since he assumes that his viewpoint is shared by others, and his thoughts are not "objects" for reflection or justification. In brief, "...egocentrism signifies the absence of both self-perception and objectivity" (1954, p. xii).

The earliest waning of egocentrism described by Piaget occurs in a spatial context during the sensori-motor period when the infant acquires the object concept, i.e., the constancy of the object when not viewed by the infant. There is a growing awareness of the self as an object among objects. However, for the young child differentiations of particular object-object and subject-object relations are not yet well defined and organized.

Piaget's major study of egocentrism centered on the cognitive egocentrism of the 4- to 6-year-old child, as compared to the 7- to

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9-year-old. The experimental paradigm was as follows: a landscape of three mountains was presented to the child, and he was asked to imagine what a doll "saw" at various locations around the landscape. Prior to 7 years of age, a child generally assumes that the doll sees what he, the child, sees regardless of the doll's position, and only at 7-8 years of age begins to be aware that the doll's viewpoint differs from his and how it differs.

The increasing objectivity of the child at this age is of crucial importance, in Piaget's view, in intellectual development.

> "The important point is that...the child of seven years begins to be liberated from his social and intellectual egocentricity and becomes capable of new coordinations which will be of the utmost importance in the development of intelligence and affectivity. With respect to intelligence, we are now dealing with the beginnings of the construction of logic itself. ...With respect to affectivity, the same system of social and individual coordination engenders a morality of cooperation and personal autonomy in contrast to the intuitive heteronomous morality of the small child." (1967, p. 41).

It is somewhat surprising to find a relatively small number of studies focused on the concept of egocentrism itself considering the importance of the concept in Piaget's theory and the frequency with which the concept is used as an explanatory factor in related studies. The relationship between egocentrism and social functioning has been investigaged, almost exclusively, by Feffer and his coworkers (1959, 1960, 1966). Cowan (1966) investigated egocentrism in relation to social communication, and Bobroff (1960) and Neale (1966) have attempted a comparison of the degree of egocentrism in certain pathological groups and matched samples from a normal population.

Whereas Piaget (1956) was concerned with assessing the presence or absence of egocentrism in children, and associated ages, the present study is an attempt to explore the ways in which egocentrism begins to decline. It is theorized that the child's awareness of himself as an object within a world of objects organized spatially about him begins with gross discriminations which follow a certain order of increasing specificity and organization. The very young child has, essentially, no expectancy regarding change in object appearance with change in his spatial location. The first step toward declining egocentrism would be the child's awareness that objects and object-arrangements look different from various spatial locations, but no specific expectancies as to how objects appear, i.e., a simple "same" vs. "different" expectancy. The differences expected by S are next differentiated into specific subject-object relations, but the relations are not yet organized into a total spatial framework. Finally, these latter, organized expectancies are formed.

It seems likely that the ability to predict what another sees from a given location follows the same steps in development as subject-object predictions do, but where this projective series begins and how it relates to subject-object relations has not been explored. The major thesis of this study is that veridical predictions about subject-object relations are based on and develop from the subject's own experience in object relationships.

A second aspect of the present study is the exploration of a new method of assessing egocentrism in contrast to most previous research which has duplicated Piaget's mountain-landscape method. In Piaget's theory the child becomes aware of the lawfulness governing subject-object relations and capable of making veridical predictions about them because of developmental changes in his cognitive structure -- a result of experiences with repeated and lawful physical events. Such encounters promote expectancies concerning future events of the same class. Charlesworth (1964) has proposed that the presence of cognitive structures can be assessed by evaluating the child's reactions in situations where expectancies are violated. A contrived situation, i.e., a trick condition, can be set up so that the child is confronted with a deviation from physical lawfulness. Such a stimulus condition is likely to elicit observable surprises or perplexity (changes in facial expression, verbal comments, etc.).

Charlesworth (1964) has assessed the presence of the cognitive structure for conservation in this manner using delay in reaction time as the dependent variable. An increase in behavior that maximizes additional perceptual contact may also occur when the subject is confronted with environmental events that are incongruous with prevailing schemata. Smock and Holt (1962) have reported that perceptual or cognitive conflict apparently initiates behavior in children designed to reduce the discrepancy between cognitive structures and environmental events.

This study will attempt to use the violation of expectancies, i.e., tricking the child, as a technique for assessing his ability to make veridical predictions about subject-object relations. The subject who is less egocentric, it is suggested, would exhibit such reactions to the "trick" as facial and/or verbal expressions denoting surprise, amusement or perplexity, and increase his perceptual contact with the stimulus.

*Methodology*. The sample of subjects (Ss) was drawn from the Merrill-Palmer nursery school. The 48 Ss ranged in age from 3 years, 0 months to 5 years, 2 months, and were divided into two age groups: 24 Ss younger than 4 years, 2 months, and 24 Ss older than 4-2. Within each age group, boys and girls were equally represented.

Egocentrism was assessed by S's performance on a task involving subject-object relations. The apparatus was a covered box about 2 feet square with a slot for viewing the box contents on two sides, labeled 0° and 180° orientation. The box contents could be viewed only when a half-second duration light inside the box was activated by S's pressing a button on the table beneath the viewing slots.

Two landscapes were used as test stimuli: one was a small doll seated on a chair in front of a TV set; the other, a house, car, and tree with a road and walk to the house inked in. At 0° orientation, S saw the back of the doll and the front of the TV in the former case, and the car to the front right side of the house and the tree on the left of the house in the latter case. E was seated to S's left at 0° orientation.

The basic procedure involved a Real condition vs. a Trick condition. In the former, the change in appearance of objects was contingent upon S's physical movements to the opposite side of the box, i.e., objects looked different by 180°.. The Trick condition was supplied by (1) rotating the stimulus display 180° as S moved 180° so that the object-arrangement was identical to what S. viewed at 0° orientation; and, (2) by rotating the display 90° as S moved 180°.

All Ss were administered both conditions with four trials per condition. Half the Ss were given Real trials first, then Trick, and the remainder had the opposite order. Under the Real condition, half the Ss had the "indoor" display, and half the "outdoor" display; the same applied to the Trick condition. The stimulus was changed between the Real and Trick conditions for each S to minimize decreasing interest in later trials.

S stood initially at 0° orientation and standard introductory instructions were given.

> "Stand here. This is a 'peek-in-the-box.' You can see a doll sitting in a chair looking at TV (or, a house, car, and tree) when you look through this window. You may look as long as you wish. Push this button to make the light go on."

When S appeared to have looked in the box as long as he wished, the experimenter (E) asked a standard question: "Would you like to look in this window some more (E points), or would you like to look in that window (E points)?" On the fourth trial, when S indicated he would like to move to another window after the standard question, E stated, "Oh, I just remembered. My friend is going to put some new things in the box for you to see. Let's go get a drink of water while my friend fixes the box for us, and then we'll peek in the box again and see what's in there." S was then taken to a nearby room while the displays were changed by another E. The mean time for this break in trials for 46 Ss was 1 minute, 10 seconds. On the eighth trial, when S indicated he was through viewing, E informed him that the game was over and then asked which things S liked to look at most (the doll and TV, or the house, car, and tree).

The position of S and the stimulus display for each trial are presented in Table 1.

Table 1

Spatial Positions of Subject and Stimulus
for Each Trial

| | Trials | | | |
|---|---|---|---|---|
| | 1<br>(5) | 2<br>(6) | 3<br>(7) | 4<br>(8) |
| Subject's position: | 0° | 180° | 0° | 180° |
| Stimulus position: | | | | |
| Real condition | 0° | 0° | 0° | 0° |
| Trick condition | 0° | 180° | 0° | 90° |

Three dependent variables were employed: (1) frequency of light presses per trial, (2) frequency of facial responses indicating surprise, amusement, and perplexity, and (3) verbal statements indicating awareness in change of appearance of objects, surprise, perplexity, amusement, and recognition that the display had turned. The first dependent variable was obtained from automatically recorded light presses of the buttons attached to a polygraph. Facial responses were recorded by a second E in an observation booth who was unaware of which condition S was being administered. The third dependent measure was obtained from tape recordings of the entire sessions with each S. Independent ratings of relevant verbalizations by two judges indicated 96% agreement on statements denoting that the stimulus had moved or turned.

It was hypothesized that (1) children under the Trick condition as compared to the Real condition evidence more facial and/or verbal surprise, perplexity or amusement, and increase the amount of visual contact (light presses) with the display; and (2), assuming less egocentrism of older children, these responses will be greater for older compared to younger Ss.

Results. The two hypotheses were tested by analysis of the three types of data: frequency of presses, of relevant verbalizations, and of relevant facial responses. Following the presentation of these analyses, other independent variables will be examined: order of Trick vs. Real conditions, stimulus display, and sex.

The first hypothesis concerned responsiveness to the Trick (T) vs. Real (R) condition. The initial analysis employed the first four trials administered to each S, i.e., those Ss who received R condition first were compared to those who had T condition first. Since the first trial was a presentation of the "standard" orientation ($0^{\circ}$) and was the same for both groups, the data were those on Trials 2, 3 and 4. The frequency of presses per trial were transformed to square-root frequencies due to the nature of the distribution of scores. A 2 x 2 x 3 analysis of variance (ANOV) was done with repeated measures on the last factor. The factors were Age (young vs. old), Conditions (Trick vs. Real), and Trials (2, 3, 4). There were no significant main effects or interactions revealed. That is, frequency of light presses did not vary significantly as a function of condition (Hypothesis 1), age of the S (Hypothesis 2), or specific trial.

Since the trials did not differ significantly under either condition, a second analysis was carried out in which Trials 2, 3, and 4 were summed as were Trials 6, 7, and 8, thus providing a comparison of each S's frequency of presses in the T and R conditions. A 2 x 2 x 2 ANOV on square-root transformed frequency of pressing was done, the factors being Age, Orders of conditions (T trials administered first, then R trials vs. R, then T trials), and Conditions (T vs. R). There were no significant main effects or interactions revealed. However, there was a tendency for Age to interact with Conditions (F = 3.06, df = 1/44, p .10). Older children tended to press much more frequently under the R condition than T condition, whereas young children pressed about equally under both conditions. In summary, the two ANOVs indicate that the two hypotheses are not supported in the frequency-of-pressing data. In relation to the second hypothesis, however, there was a tendency for older Ss to view the stimulus less frequently when a trick was involved.

The two hypotheses were then tested with the verbalization data. These data were obtained by scoring each S's verbatim records for any of the following types of verbalizations: stating that the display had moved or turned, statements concerning the change in appearance of objects (i.e., things looked different or changed), and statements or questions denoting surprise, perplexity and amusement. Of the 48 Ss, 22 made such verbalizations under the T condition *only*, 1 S made such verbalizations under R only, 21 Ss made no such verbalizations, and 4 Ss verbalized under both conditions. The McNemar Test of these data was significant ($\underline{X}^2 = 13.18$, $p < .001$). That is, the number of

Ss giving relevant verbalizations was significantly greater under T condition only than under R condition, and thus supports Hypothesis 1. Of the 26 Ss who made relevant verbalizations under T condition, 14 were young Ss, and 12 older, indicating no support for Hypothesis 2.

Similar analyses were carried out on facial responses indicating amusement, surprise or perplexity on Trials 2-4 and 6-8. It was found that 16 Ss responded facially in both T and R trials, 13 Ss in T trials only, 6 Ss in R only, and 13 Ss in neither condition. The McNemar Test indicated that these differences were not significant ($\underline{X}^2 = 1.89$, $p$ .05). Because of fairly substantial individual differences in rate of smiling, in particular, it appeared that a more appropriate test of the hypotheses would be afforded by examining data on those Ss who had a differential number of responses under the two conditions rather than using the absolute occurrence of any relevant facial response. The following analysis, then, excludes Ss who have relevant facial responses equally under T and R conditions, as well as those who gave no facial responses under either condition. Of the 28 Ss who showed differential facial responses under T and R, 19 Ss gave more facial responses under T than R, and 9 gave more under R than T. The Sign Test of these frequencies was significant ($z = 1.70$, $p$ .045). Of the 19 Ss who were more facially responsive to T than R condition, 11 were young Ss and 8 older Ss. The age variable was not significantly related to such responsiveness ($\underline{X}^2 = 0.35$, p .05).

Several other independent variables were examined although no specific hypotheses were made concerning their effects. The first was the Order of conditions. As noted previously, the ANOV revealed that Order had no significant influence on frequency of presses. However, it was found that when verbalizations occurred under the T condition, they occurred significantly more often when T trials were administered after R trials than in the reverse order ($\underline{X}^2 = 4.11$, p .05). Differential facial responding was not significantly influenced by Order, as assessed by Fisher's exact probability test.

The effect of the two stimulus displays was assessed with the verbalization and facial data. Verbalizing under the T condition occurred in 13 Ss with the indoor scene, and 13 Ss with the outdoor scene. Greater frequency of facial responding in the T than R condition occurred with 9 Ss with the indoor scene, and 10 with the outdoor scene, again indicating no effect associated with stimulus differences. In this regard, Ss were asked their preference of scenes at the end of testing: 21 preferred the outdoor, 23 the indoor, 2 could not decide, and 2 did not answer. It was found that preferences were significantly related to sex differences ($\underline{X}^2$ = 4.42, p .05), the girls preferring the indoor scene, and the boys, the outdoor scene.

The third independent variable, sex of S, was examined for the verbalization and facial data. Relevant verbalizations under T condition were given by 14 boys and 12 girls. For facial data, two categories were used: Ss who had more facial responding under T than R trials vs. Ss who responded more under R, had equal responding or no responding. In the first category were 6 boys and 13 girls, and in the latter category 18 and 11, respectively. There was a tendency for more girls than boys to respond facially under T condition ($\underline{X}^2$= 3.14, p .10).

Discussion. The results of the present study provide some initial information concerning spatial expectancies of preschool children, and provide comparisons with research on older children. In relation to the first hypothesis, it was found that about half of the sample of 3 to 5-year-olds clearly differentiate between veridical and "unlawful" subject-object relations by verbalizing surprise, perplexity, noting change in the display, suggesting movement had occurred, etc. Of the 48 Ss, 14 not only recognized that something different had occurred from what they apparently expected but described that change as involving stimulus movement or turning. It was also found that facial expressions occurring differentially between R and T conditions occurred in significantly more Ss under T than R conditions. In Piaget's study 4-5 year olds were found to seldom understand the task requirements of inferring what a doll saw from various locations, and the earliest case cited of a child being aware that the doll would see something different was at 6 years, 10 months. In contrast, the present method affords some information about the degree of veridical expectancies of 3 to 5-year olds, specifically that some children of this age do have gross expectancies of a relation between object appearance and their position in space. Although these children may or may not have been able to infer what they would see prior to changing their position, they indicate verbally a recognition that what they see after changing position is strange or incorrect.

It is of interest to note that in Charlesworth & Zahn's study (1966) of apparent violation of 180° rotation on order of beads with first and second graders there was "an almost complete absence of verbal or vocal responses" indicating surprise or perplexity. It appears that preschoolers are much more prone to verbalize unexpected events than are older children (6 to 8 years of age).

In general, the frequency with which Ss illuminated the stimulus display was not related to the T condition as was hypothesized. And, in fact, there was a trend ($p < .10$) among older Ss to illuminate the display less frequently under T than R condition. Casual observation suggested that some of the children were eager to change to another position as if they suspected that something was "going on" and wished to check their suspicions. Such an inference would require, of course, empirical inquiry. At the least, the data are divergent from Smock and Holt's findings (1962) of increased visual contact with conceptually conflictual displays in 6 to 7½ year olds.

The second hypothesis concerned greater responsiveness to T than R condition by the older Ss. As indicated, no dependent variable was found to vary significantly as a main effect of age. It appearrs, then, that spatial expectancies do not vary significantly in the age range tested as a direct function of age. There are some data (Neale, 1966) to suggest that egocentrism, as assessed by Piaget's spatial task, is significantly related to IQ rather than CA. Mental age data were not available for the present sample to explore such a relationship.

The present study affords no independent assessment of the degree of egocentrism of the Ss by which to compare their performance on the Trick-Real assessment procedure. This type of validation of the present procedure is currently being undertaken. The present study provides some baseline data from which other studies, particularly those related to social-class differences in egocentrism, may be carried out.

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# An Attempt to Shape Bidimensional Attention in 24-month-old Infants*

John S. Watson
and
Gary Danielson

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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# An Attempt to Shape Bidimensional Attention in 24-month-old Infants

John S. Watson

Gary Danielson

The Merrill-Palmer Institute

Within a wide variety of cognitive developmental topics, much is made of an assumption that young children tend to center attention on single dimensions or attributes of stimulus objects. The ability to simultaneously consider two or more stimulus dimensions is presumably absent until about the age of 7 years - at least this appears to be the position presented within the Piagetian literature "Wallace, 1965; p. 80).

Advancement beyond unidimensional attention is viewed as necessary for a variety of significant cognitive functions. Within the writings of Piaget, the numerous "conservations" (e.g. of quantity, of area, of social role), non-egocentric spatial and social conceptualization, and multiple-classification behavior are each assumed to be prohibited by the young child's limitation to unidimensional attention. A similar proposal has recently been made outside the Piagetian domain to explain the errors of 6-year-olds in a study of the development of conjunctive and disjunctive rule formation (King, 1966).

Direct support for the contention that young children are limited to unidimensional attention comes primarily from two sources of empirical data. These are the behavior of young children in object-sorting tasks and in Piagetian conservation tasks. An example from conservation tasks is Piaget's observation that when a young child watches a piece of clay being elongated into the shape of a sausage, the child will consider the change in shape to involve a change in amount of clay. If he centers his attention on length, he will think the clay is increasing in amount. If he attends to the fact that the sausage becomes thinner, he will think it is decreasing in amount. "In both cases, the child is unaware of conservation, and refers to only one dimension, either one or the other, not both at the same time" (Piaget, 1967, p. 155).

The behavior of young children in object-sorting tasks has also provided direct support of a limitation to unidimensional attention in children below the age of about 7 years. Children from about 2 to 7 years of age appear quite able to sort objects on the basis of a single attribute, but they "cannot employ two attributes of the same object, that is, break up a group of apples along the multiple dimensions of big red apples and small green apples" (Sigel, 1964, p. 218). A notable exception to this general finding occurred in a study by Colby and Robertson (1942) which was designed to assess the relative frequency of color and form serving as a consistent basis for sorting by children ranging from 3½ to 9½ years old. A few children younger than five years of age were judged capable of sorting on the basis of color, form, and size simultaneously.

The exceptional cases observed by Colby and Robertson might be viewed simply as "exceptions that prove the rule" of unidimensional attention in children younger than 7 years of ago. If these exceptions are to be accounted for, however, then at least two quite different theoretical tacts might be taken. On the one hand, these cases can be viewed as an "illustration of the need to be sensitive to the individual differences in the stages in which various phenomena appear, rather than being overly dependent on age levels" (Sigel, 1964). This position accepts the cases as early arrivals in the developmental stage which embodies the ability to attend to multiple dimensions (e.g. the stage of "concrete operations" in Piaget's theory).

An alternative interpretation of Colby and Robertson's cases is that they illustrate a need to distinguish between what children do and what they are capable of doing - a distinction which Shantz (1966) has pointed out as often lacking in much of Piaget's work. The point here is that with the finding that some children before five years of age are able to attend to multiple dimensions, then the question arises as to whether the children judged unable are truly unable or if perhaps the standard assessment procedures have simply failed to elicit an existing capacity for multidimensional attention. In this regard, it is notable that the standard sorting and conservation tasks are non-instrumental in form - that is, they do not provide reward for correct responses.

Thus, existing data at most support a contention that children younger than seven years of age normally employ unidemensional attention in non-instrumental discrimination tasks. Whether this tendency toward unidimensional attention is also normally dominant in instrumental discrimination tasks is not yet empirically supported. Even if it were to be found that unidimensional attention is a normally dominant response tendency across both instrumental and non-instrumental discrimination tasks, an important question would remain as to whether multidimensional attention is beyond the functional capacity of the young child or if it is rather a response which can be learned under appropriate conditions.

The present study is an attempt to shape bidimensional attention in 24-month-old Ss within a sorting task involving objects which vary on the basis of two levels of the dimension of color and two levels of the dimension of form. The study has two principal objectives.

One is to assess the extent of success of this technique at this age. The other objective is to assess the extent to which unidimensional attention appears to account for errors in what in this case is clearly an instrumental discrimination task.

## METHOD

Subjects. Ss were children within 2 weeks of 24-months old. They were solicited by mail from published lists of official birth announcements for the Detroit area. Potential Ss were selected from these lists on the basis of sex and age until 6 boys and 6 girls within each of two experimental groups met certain performance criteria (i.e. completed Step II of shaping procedure as described below) for entrance into the participating sample of the study. Two boys and ten girls failed to meet these performance criteria. Thus, sample construction required successful solicitation of 36 Ss and these represent the total positive responses to approximately 300 soliciting letters. All Ss except one were Caucasian. The educational level of the fathers of the 36 Ss ranged from 10 to 20 years of formal schooling with a mean of 15.5 years.

Stimulus Objects. The various sorting tasks involved use of three plastic blocks each of which was ½-inch thick with a surface area of approximately 2½ square inches. The blocks differed from one another on the basis of the specific values (black vs. red and circle vs. triangle) of two binary dimensions (color and form). The specific combinations employed were black-circle, black-triangle, and red-circle.

Apparatus. Sorting behavior was elicited and rewarded with the use of the sorting box shown in Figure 1. The box has two slots 12 inches apart on the left-right axis near the top of its slanting front surface. Blocks placed in these slots are retained within the box until released by an electric switch. When released, the blocks enter a "return basket" positioned mid-line at the front base of the box. The head and torso of a clown are painted on the slanting front surface. The clown's eyes and nose are 12 volt panel lights which can be lit in unison. Within the box are an electric train whistle and a Trix Cereal dispenser which can deliver a single piece of cereal into a "reward basket" situated next to the object return basket. The lights, train whistle, and cereal served as reinforcement as described below.

## PROCEDURE

Ss were tested individually in a laboratory room at the Merrill-Palmer Institute. The mother of each S accompanied the child into the room and was seated approximately 10 ft. from the sorting box. As soon as *E* judged that *S* had become reasonably adapted to the situation, *S* was given two blocks. The specific blocks used differed for two experimental groups. The blocks were the black-circle and red-circle for Color Group *Ss* or black-circle and black-triangle for Form Group *Ss*.

*Step I of Shaping*. After *S* examined the blocks, *E* asked for them back saying "Let me show you what I can do with these". *E* then slowly placed one block in the right-hand slot and then one in the left-hand slot. At this point, *E* began blinking the lights on the box by means of a remote control switch held behind his back (the switch provided independent control of the three reinforcements and the object return mechanism). The lights were blinked for five seconds, then the object return mechanism was activated. *E* acted elated and asked *S* "Can you do that, can you make the lights go on?"

As *S* began putting the blocks in the box, *E* seated himself about 8 ft. to one side and began recording *S*'s pattern of object sorting. During Step I of shaping, reinforcement was contingent on spatially separating the two blocks without regard to which block was placed in which slot. If *S* made the error of placing both blocks in one slot, no reinforcement occurred during a period of 5 seconds prior to return of the blocks. Step I continued until *S* was correct on 6 consecutive trials following the 5th trial or until completion of 25 trials.

Step II of Shaping. Step II began directly upon completion of Step I and involved solely a change in the sorting pattern required. For Color Group Ss, reinforcement was now contingent on a specific pattern of separation, e.g. red-left and black-right. The same was true for Form Group Ss, e.g. circle-left and triangle-right. Error was therefore an instance of either not separating the two blocks or of reversing the specified pattern of separation. Step II continued until S was correct on 7 consecutive trials following the 5th trial or until completion of 35 trials.

Step III of Shaping. At the start of Step III, E showed S the third block (i.e. the red-circle for Form Group Ss or the black-triangle for Color Group Ss), then demonstrated slowly the correct sorting pattern. For all Ss, the correct pattern was specified as placing the black-circle in the slot which had been correct in Step II and placing the red-circle and black-triangle in the other slot. Four types of error were now possible: non-separation (all 3 blocks in one slot), reversal (correct separation but wrong slots), form separation (circles in one slot and triangle in the other), and color separation (black blocks in one slot and red block in the other). With the exception of one S[1], Step III continued until S stopped playing.

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[1] This S was the first to reach criterion and was stopped in accordance with an initial decision to stop Ss when the criterion was met. However, it soon became clear that criterion performance was infrequent, so this policy was dropped to insure maximal sensitivity in assessments of chance occurrences.

Criterion was set at 8 consecutive correct trials.

The specific shaping sequence employed in this study was chosen for several reasons. First of all, a S could theoretically move through all three steps without facing a greater than .5 chance of making an error. Step I provides 4 logical alternatives of which 2 are correct. Step II provides the same alternatives, but a S mastering Step I should be limited to the 2 separation patterns of which 1 is now correct. With mastery of Step II, a S should presumably face the task of learning in which of the two slots the new block must be placed. Thus, while there are 3 possible ways of sorting the 3 blocks in Step III, a fully shaped S might only face a .5 chance of committing an error.

The shaping sequence employed also provided the possibility of introducing either a color or form sorting task at Step II in the sequence. The two types of unidimensional discrimination therefore might be compared regarding relative difficulty and relative transfer value for Step III.

Reinforcement Change. All Ss began with the lights serving as reinforcement for correct trials. In an attempt to obtain a maximal number of sorting trials, the nature of the reinforcement was changed as soon as S met an adaptation criterion of 1 inter-trial delay greater than 5 minutes, or two delays exceeding 2 minutes each, or 3 delays exceeding 1 minute each. When a *S* met this criterion for the first time, a correct sorting trial was demonstrated and reinforcement was changed from lights to lights plus train whistel. The second time the adaptation criterion was met, a correct trial was demonstrated and reinforcement was changed from lights plus whistle to lights plus whistle plus Trix cereal. When *S* met the adaptation criterion a third time, the session ended.

During all delays exceeding 15 seconds, *E* activated the object return mechanism which made a "click". This was done every 15 seconds in conjunction with a verbal request by *E* for *S* to continue, until *S* either began sorting again or until the adaptation criterion was met.

## RESULTS

*Step I*. Of the 24 *Ss* in the participating sample of this study, 22 reached criterion on Step I within the 25 trials allotted. Criterion was reached without error by 18 *Ss* and with but 1 error by the remaining 4 *Ss*. The two failing *Ss* were a boy and a girl in the Color Group.

*Step II*. Within the 35 trials allotted to Step II, 10 of the 24 *Ss* reached criterion. As was the case in Step I, those *Ss* who reached criterion tended to do so with very few errors. (mean = 3.8).

The distribution of mean errors across the four sex and method subgroups and of Ss reaching criterion in Step II are presented in Table 1.

Table 1. Mean Errors and Frequencies (N) of Criterion Performance for the Sex and Method Subgroups in the Unidimensional Sorting Task of Step II

| Color Group | | Form Group | |
|---|---|---|---|
| Boys | Girls | Boys | Girls |
| 12.8 (1) | 17.1 (2) | 9.0 (4) | 12.0 (3) |

An analysis of variance of the square root of errors during Step II did not reveal any significant F's for the main effects of method (i.e. color vs. form sorting) or sex or for the interaction of method and sex. However, regarding the distribution of Ss reaching criterion in Step II, it is notable that the 10 succeeding Ss were evenly distributed by sex, but the distribution by method was 7 on form and 3 on color. Thus, the data show a trend suggesting a lesser difficulty of the form sorting task.

Step III. Within the unlimited trials allotted to Step III, 4 Ss reached criterion. The Ss were 2 Form Group boys, 1 Color Group boy, and 1 Color Group girl. Errors to criterion were 43, 1, 1, and 15 respectively. The infrequency of criterion performance on the bidimensional task raises the question of whether these successes are simply products of chance. That is to say, is the performance of these four Ss sufficient to reject the universal negative hypothesis that no 24-month-old can succeed in Step III? The data support rejection of the universal negative hypothesis on the basis of either of two analyses. On the one hand, since Ss were permitted to continue sorting indefinitely this allowed one S to accumulate one set of 18 consecutive correct trials. Assuming that chance performance above unidimensional sorting has a per trial probability of .5 during Step III, and considering the number of opportunities for a set of 18 or more consecutively correct trials within the responses of all 24 Ss, the probability of the chance occurrence of a set of 18 or more consecutively correct is less than .003.

Moreover, if performance on the final 14 trials in Step III is considered, a binomial test of the frequency of correct trials exceeded the .006 level for each of the 4 Ss who reached criterion. Thirteen Ss continued for at least 14 trials on Step III. It is extremely unlikely that of these 13 Ss 4 would exceed the .006 level by chance.

Accepting the 4 Ss as valid cases of bidimensional sorting, an important question arises as to why these 4 succeeded while the remaining 20 Ss did not. One variable of obvious importance is the number of sorting trials which were produced during Step III. The variation across Ss ranged from 0 to 94 trials. The fewest trials to criterion for any S was 14 trials. It would seem reasonable, therefore, to eliminate from further analyses the 11 Ss who did not accrue at least 14 trials in Step III. The remaining 13 Ss thus provide a basis for examining variables potentially related to success within the performance of Ss who persevered for at least a minimally sufficient number of trials.

With these 13 Ss,comparisons were made between the 4 successes and the 9 failures regarding education of father, sex of S, color vs. form task on Step II, and verbal fluency (as based on frequency, structure, and articulation of speech during the testing session). No appreciable trends were evident for any of these variables, though sensitivity, of course, is limited by the small N available. However, when success vs. failure on Step II was considered as shown in Table 2, a Fisher Exact Probability Test was significant at the .05 level.

Table 2. Contingency Analysis of Relationship Between Criterion Performance on Step II and Step III for Ss Continuing for 14 or More Trials on Step III

| | | Criterion Met on Step II | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Criterion Met on Step III | Yes | 4 | 0 | 4 |
| | No | 3 | 6 | 9 |
| | Total | 7 | 6 | 13 |

Error analysis. Errors during Step III were analyzed to see if they were produced in a manner consistent with the assumption that young children center attention on a single dimension. This study was designed to provide two assessments of the unidimensional hypothesis. First, if a S's errors on Step III were produced by unidimensional attention, then his pattern of errors should reflect this by a dominance of color or a dominance of form error types. Secondly, a tendency toward unidimensional attention could be expected to be strengthened by reinforcement during the unidimensional sorting task of Step II.

Were this so, Color Group *Ss* should tend toward color dominance in Step III and Form Group *Ss* should tend toward form dominance - at least this should be expected at the beginning of Step III for those *Ss* reaching criterion on Step II.

The occurrence of unidimensional dominance during Step III was assessed by examining the degree of disproportion in the frequencies of color and form errors for each *S*.

In a previous study (King, 1966), the existence of unidimensional dominance was assessed by limiting the analysis to *Ss* making at least 2 relevant errors and classifying dominance as existing for these *Ss* displaying an error ratio of 2:1 or greater. However, since *Ss* making 2, 3, or 4 relevant errors can be expected to reach this criterion of "dominance" by chance at the probability rates of .5, 1.0, and .6 respectively, this criterion was not employed in the present study.[2] Rather, in this study analysis was limited to *Ss* making 4 or more relevant errors and the probability of error ratios as disparate or greater than that observed was calculated for each *S*. Nine of the

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[2] With this criterion of unidimensional dominance, King (1966) found a greater proportion of 6-year-olds than older *Ss* showing dominance. But without some indication that the groups did not differ in their distributions of error frequencies, King's finding is difficult to interpret.

13 *Ss* who persevered for 14 or more trials in Step III committed at least 4 errors of the color or form types. The probabilities for the observed error frequency disparities ranged from 1.0 to .02 across the 9 *Ss*. Six of the 9 probabilities were less than .2. A conservative estimate of the likelihood that 6 of 9 *Ss* would show this extent of unidimensional dominance by chance is p less than .01, as estimated by reference to the Poisson distribution.

For 5 of the 6 *Ss* showing dominance at p less than .2, color was the predominant error type. Regarding the question of whether dominance in Step III would be related to the dimension involved in Step II, no transfer effect was observed in that 3 cases of dominance favored the dimension involved in Step II and 3 cases did not.

An analysis of only the first 4 form or color errors was made to check whether unidimensional dominance and transfer effects might be exhibited most strongly within the initial trials of Step III. Contrary to the expected, unidimensional dominance appeared less evident within the initial 4 errors than in later errors. Of the 9 *Ss* who made at least 4 relevant errors, only 2 *Ss* showed a uniform consistency of error type within their first 4 errors. Moreover, of the 6 *Ss* who eventually developed a notable dominance (i.e. p of ratio less than .2), 4 *Ss* had lower ratios initially than later while only 1 *S* had a higher ratio initially. Regarding evidence of transfer on itital errors, none was apparent.

## DISCUSSION

The results of the present study provide one rather clear and important implication. By the age of 24 months, some children are quite capable of performing a bidimensional sorting task - at least this seems clear within the stimulus and reward context employed here. While 4 successes out of a starting sample of 36 *Ss* may at first appear a modest ratio of capability, it is notable that when reference is limited to *Ss* who both mastered the unidimensional task of Step II and continued for at least 14 trials in the bidimensional task, the ratio rises to 4 successes out of 7 *Ss*.

Previous discussions of the young child's presumed inability to perform tasks requiring multidimensional attention have viewed this inability as the consequence of the child's *general* limitation to unidimensional attention. Since that proposal has arisen primarily from observations of young children in non-instrumental tasks, error analyses were undertaken to see if the proposal appears applicable to the instrumental task of this study. Although a significant degree of unidimensional dominance was found in the color and form errors produced during the bidimensional task of Step III, two aspects of the dominance patterns which occurred seem inconsistent with the general unidimensional hypothesis.

On the one hand, the specific direction of dominance which occurred (color vs. form) was apparently unaffected by the type of unidimensional training received by a S during Step II. While this fact might be viewed as reflecting an immutability of an original dominance tendency which S brought into the experimental session, this seems unlikely since even Ss who rapidly mastered the unidimensional task on Step II did not show any consistency of dominance of that dimension within Step III.

Another inconsistency with the unidimensional hypothesis is the finding that unidimensional dominance tended to be less clear within the first four relevant errors of Step III than during later errors. Why would Ss show less tendency toward unidimensional attention immediately following Step II trials providing reward for unidimensional attention than after a set of Step III trials in which only bidimensional attention was rewarded? One possible explanation would be that multidimensional attention in the young child is partially under the control of the cue aspect of reinforcement which designates the instrumental value of object discrimination per se. If so, then as trials continued in Step III with little or no reinforcement occurring, multidimensional attention would be expected to give way to unidimensional attention.

This hypothesis of the cue value of reinforcement would also explain the fact that Ss reaching criterion on Step II were significantly more likely to reach criterion on Step III. These Ss would enter Step III with a greater tendency toward multidimensional attention due to the immediately preceding high rate of reinforcement received in Step II. Surely simpler explanations are possible, e.g. proposals of ability selection in Step II or shaping consistency from Step II to III. However, it is interesting to note that the hypothesis at hand also fits results of a study by Eimas (1965) in which kindergarten children were found to use compound cues in a discrimination task in which reinforcement could be obtained by attention to single component cues alone.

Upon reflection, it seems likely that many of the learned adaptations which young children acquire in language and social behavior require attention to both specific cues and their stimulus contexts, e.g. discriminations between intonational contrasts or syntactical contexts of certain words, between love-pats and soft-spanks, or between "warnings" from a mobile versus momentarily immobile parent. In light of the probable number of such multidimensional discriminations made by young children, it would hardly be surprising if multidimensional attention were to become eventually the model rather than the rare initial response to instrumental discrimination situations.

It is not clear whether the limited number of Ss showing bidimensional attention in the present study is a sign that this response is yet rare at 24 months of age or whether the limited number is an artifact of a failure to obtain and maintain sufficient involvement in the task. However, the performance of the 4 Ss who did master the bidimensional task is certainly ample to imply that bidimensional attention is an available response for some children long before their seventh year.

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# Bidimensional Attention in Lower-and Middle-Class Preschool Children: A Developmental Study *

John S. Watson
and
Richard Leinberry

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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# Bidimensional Attention in Lower-and Middle-Class Preschool Children: A Developmental Study

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Richard Leinberry

This study is presented in summary form because time limitations do not permit a complete written report at this time. The study was carried out as a logical follow-up of the experiment by Watson and Danielson (ref. this Annual Report). The major aim of the present investigation was to extend the age range from that involved in the original study and to examine the possibility of social class differences in any observed developmental trends.

Bidimensional attention was examined here with the same apparatus and essentially the same procedure employed by Watson and Danielson. Subjects were Negro children of three age periods-2½, 3½, and 4½ years of age. This range of ages provides the possibility of assessing an existing contention that children from lower-class homes begin to show the effects of their disadvantaged environments at about 3 years of age.

Method: Ss began the task with either a form sorting problem or a color sorting problem wherein reinforcement was contingent on a specified sorting pattern, e.g. red-left and black-right, circle-left and triangle-right, etc. This problem is the same as that used in "Step II" of the procedure employed by Watson and Danielson. If and when S mastered this single dimension task, the problem was altered so that it required attention to two dimensions (form and color) in the same manner as employed by Watson and Danielson in "Step III" of that study.

A sufficient number of subjects were tested so that 16 Ss (8 boys and 8 girls) would reach the single dimension criterion within each of six age x class cells in the study design--six cells being composed of three age groupings (2½, 3½ and 4½ years) within each of the two class groupings (lower- and middle-class. However, since so many of the 2½ year olds were unable to meet the criterion of single dimension sorting, it was decided to test only as many 2½ year olds as had been necessary for cell completion in the 3½ year-old groups.

Results: A preliminary analysis of the data shows that there was very little difference between the 3½ and 4½ year-old samples regardless of social class. Of the 2½ year olds very few actually completed the task at the required level of competence. Of the 3½ and 4½ year-old children about 95 percent were successful.

The following table presents a breakdown of the total 122 subjects tested as they are distributed in the six age x class cells. The table also presents tallies regarding the frequency with which tested subjects "refused to sort," "sorted but failed single dimension criterion," "passed single dimension but failed two dimension criterion," and "passed two dimension criterion."

| Class | Age | "Refusal" | Failed single dimension | Passed single but failed two dimensions | Passed two dimension criterion | Totals |
|---|---|---|---|---|---|---|
| Lower-class | 2½ | 7 | 9 | 4 | 1 | 21 |
| | 3½ | 3 | 2 | 0 | 16 | 21 |
| | 4½ | 2 | 0 | 0 | 16 | 18 |
| Sub-totals | | 12 | 11 | 4 | 33 | 60 |
| Middle-class | 2½ | 8 | 7 | 4 | 3 | 22 |
| | 3½ | 4 | 2 | 0 | 16 | 22 |
| | 4½ | 1 | 1 | 2 | 14 | 18 |
| Sub-totals | | 13 | 10 | 6 | 33 | 62 |
| Totals | | 25 | 21 | 10 | 66 | 122 |

The results of this experiment appear to show very little effect of the social class variable. The data are not supportive of any contention that the effects of class status tend to become manifest at about 3 years of age. However, it appears that both the 3½-and 4½-year-olds found the task very easy and this ceiling effect may be masking existing class differences. This rapid mastery by the older two age groups was not at all expected. The quick shift in ease of bidimensional sorting between 2½ and 3½ years of age is viewed as an important and intriguing developmental finding.

# A Training Study in Object Related Fluency*

Irving E. Sigel

Elizabeth Ireland

John S. Watson

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

## Study 4. A Training Study in Object Related Fluency*

Irving E. Sigel

Elizabeth Ireland

John S. Watson

It is felt that the lack of reinforcement for verbal expression in a lower-class environment inhibits fluency. The purpose of this study was to demonstrate the practicality and feasibility of utilizing an operant conditioning technique in promoting verbal fluency.

Method: The subjects, four kindergarten children from an inner city public school in Detroit were given a total of 7 sessions each during three separate meetings. The testing consisted of (1) establishing a baseline of responses to 10 simple objects within a 30-second time span, (2) five shaping sessions designed to increase the number of object related statements (i.e., those involving attributes of structure and function of the objects), and (3) a transfer session. Each session utilized 10 objects that are common items usually found within the experience of the subjects. To establish a baseline, each of the 10 objects was presented to the subjects within the initial probe of "tell me everything that you can about this." The mean number of responses emitted within the 30-second time period determined the baseline. No reinforcement was given to the subjects during the pretest.

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

The shaping sessions introduced an extrinsic reqard "very good" on a fixed ratio schedule of reinforcement beginning with 2 responses and increasing as fluency increased. Spot probing was employed only if the subject did not reach the base number of responses during a trial. The post-test session provided no reinforcement and demonstrated the amount of transfer to an unrewarded situation.

Results: A correlated t (1 tail test) using number of trials on the baseline and transfer sessions for each of the four subjects reveals a significant increase in object related statements ($S_1$, $p < .001$, $S_2$, $p < .1$, $S_3$, $p < .25$, and $S_4$, $p < .005$).

Chi-square analysis of frequency of responses within three (collapsed) categories was carried out for each subject individually. These resulted in finding that significant changes in distribution of responses occurred for two subjects ($S_1$ - $X^2 = 10.93$, $p < .01$ and $S_2$ - $X^2 = 22.17$, $p < .001$). Distribution did not change significantly for the remaining two subjects. It is notable that the subjects showing a significant shift in distribution of responses across categories were those who showed limited breadth of category representation during the base period, while those subjects who did not shift significantly had comparitively broad representation during the base trials. The possibility that a shift in the categorical representation is a simple function of the number of responses is doubtful since the subjects did not differ appreciably in response frequency in base trials; i.e., S's showing maximum breadth of category representation in base trials produced no more responses during those trials than did the other two S's.

# Exploratory Studies in Creativity*

Marjorie C. Clos

and

Felicisima Serafica

The Center for Developmental Studies in Cognition
The Merrill-Palmer Institute
71 East Ferry Avenue
Detroit, Michigan

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

# Exploratory Studies in Creativity Using Head Start Children*

Marjorie C. Clos, Ph.D.

Felicisima Serafica, M.A., M.S.

Studies on the psychology of creativity have become numberous during the past few years. One major approach has been to study individuals who have demonstrated their creative abilities within a variety of professions. Another approach has been the assessment of creative potentials through testing programs. And still another approach has been to try to train individuals in creative skills. In this latter approach, the main concern is to raise the general level of creativity in all types of individuals regardless of their initial creative potential.

Guilford (1957) in discussing creative artistic talent hypothesized that it is not a unitary or uniform commodity, but may be accounted for in terms of a large number of factors or primary mental abilities, some of which may differ from the creative abilities in fields such as science and management. Among the known factors, those considered to be the most obviously creative abilities are fluency, flexibility, and originality. They fall within the general class of factors known as productive thinking abilities and in a subclass of divergent thinking abilities. Crutchfield (1966) also conceptualizes creativity as a complex process, the hallmark of a creative response being its quality of uniqueness coupled with its appropriateness to the particular problem.

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* The research reported here was supported in part by OEO Heart Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

Unusualness and appropriateness are considered by Jackson and Messick (1965) too as being among the criteria of creativeness. They specify that the judgment of unusualness is typically made not in terms of all other objects of a general class but in terms of a greatly restricted subset. In other words, the infrequency of a response should be considered relative to norms which serve as a judgmental standard for evaluating usualness. Internal and external requirements for appropriateness must be fulfilled. In order to meet these standards, a product must fit its context. It should "make sense" in light of the situational demands and the aims of the producer. Furthermore, the internal elements must also blend together and be appropriate to each other, particularly in the case of a complex product when coherence becomes more difficult to achieve. Appropriateness is therefore a continuous rather than a discrete quality, present in varying degrees rather than totally or not at all. Two additional criteria have been proposed by Jackson and Messick (ibid). One of these is transformation, i.e., the use of materials or ideas in such a manner as to overcome conventional constraints. While the unusualness of a product is evaluated relative to norms and its appropriateness relative to the context, the transformation power of a product would be judged relative to the strength and nature of the constraints that were transcended. It is emphasized that transformations are not merely improvements on pre-existent forms but involved the creation of new forms. The fourth criterion, one which its proponents believe to be present in some of the most highly creative products is condensation or the coalescence of meaning in a product. The polar concepts of simplicity and complexity are unified in the highest form of condensation. An important judgmental standard for the evaluation of creative condensation would be its summary power or the multiplicity of interpretations and the extensiveness of expansions which are generated. These four components of creativity are regarded as being developmentally interdependent.

Schulman (1966) has used a Drawing Completion Task (DCT) measure of creativity which embraced five properties: conventionality, theme variability, physical expansion, form initiation, and elaboration. Conventionality referred to the extent that the subject used the same line combination in the same way as other subjects. Theme variability tapped the ability to break away from ready-made themes. Physical expansion was a measure of the subject's ability to add more (lines not confined with the given lines) to the situation than was given to him. Form initiation attempted to get at the ability to vary the shape of the lines drawn, rather than to repeat the shape of the given lines. Elaboration dealt with playfulness, additions, and embellishments. The results of Schulman's study revealed a significant correlation between creativity and perceptual openness. One major implication of the empirical findings which was pointed out by the investigator is that creative expression is dependent upon prior receptive experience.

Crutchfield (1965) suggests that there are two steps in training creativity -- 1) the strengthening of certain cognitive skills, and 2) the encouragement of attitudes which favor the use of these skills. He further suggests that one of the most central skills is the ability to generate many responses that are original and are effectively adaptive to the solution of the task. Programed instruction, he feels, can be used if the potentially detrimental features of it, such as rigidity of presentation and standardization of materials, are mitigated by developing new programing techniques that are adaptive to creativity. The self-pacing, directing, and administering features of programed instruction, he feels, do place the focus of initiative in the individual which is needed in creativity training.

The following pilot studies then concern two aspects of creativity; namely, the measuring of creativity and the development of a programed instruction booklet in teaching art. The first study was an attempt to compare the creativity expressed by pre-school children in portraying a familiar concept, i.e., a person. It also explored the use of colored felt forms to overcome the motor limitations present in very young children. Lastly, it sought to contrast the spontaneous representations produced by the subjects with their reproduction of these representations.

Procedure, Study 1

Forty children in Project Head Start, ranging in age from three to five, were tested. Each child was asked to "Draw a Person", then "Make a Person in Felt", and finally to "Copy the Felt Person".

The responses to the "Draw A Person" task (DAP) and "Make A Felt Person" task (MAFP) were rated on a ten-point rating scale for creativity. (See Appendix B). The correlations between the independent ratings of two judges were .94 and .80 respectively. Scores on the two tests correlated with each other at .76. A ten-point rating scale was also devised for the graphic reproductions of the felt portrait. On this, the correlation between the judges' ratings was .78.

Results and Discussion, Study 1

Analysis of the data failed to reveal any significant difference between scores for creativity on the DAP and those obtained from the MAFP. When the number of scorable responses on each test were compared, a discrepancy was noted. The entire sample of 40 children or 100 per cent were able to produce scorable responses on the MAFP but only 28 or 70 per cent of the group yielded scorable responses on the DAP. Apparently, the use of felt forms to overcome motor limitations helped the subjects to comply with the rudimentary requirements of the task but did not really enhance their creative expression. Only 17 children or 42 per cent of the sample were able to copy the picture of the person that they had made out of felt. It would appear that copying is a more difficult task than spontaneous representation using either graphic or felt media. Figures 1 and 2 show a felt picture and a graphic reproduction of it that is adequate and a felt picture and a graphic reproduction of it that is unscorable.

The scores of ten three-year-olds were contrasted to those of a similar number of five-year-olds. The mean scores of the older children were higher than those of the younger subjects on both tests. This was also true of their mean score on the copying task. The older the child, the more capable he was at representation, and the more creative was his product. However, only 40 per cent of the five-year olds were able to copy their spontaneous representations of a person.

Although the mean scores for creativity on the two tests did not differ significantly, qualitative analysis of the data revealed that for some children the use of felt forms enabled them to achieve a level of representation and a degree of creativity far above what they were able to attain in drawing. Figure 3 illustrates this. The data also suggested that a high IQ does not necessarily indicate high creativity. Figure 4 shows the responses of the child with the highest IQ in the sample. Note how it contrasts with Figure 2 which was produced by the child with the lowest IQ in the sample.

The results of this study provide some indications that creativity is preceded by a firm grasp of the object concept. The range of the DAP and MAFP responses correspond to the developmental sequence in the drawing of the human figure outlined by Harris and others (Harris, 1963).

This also raises the question of whether training in the concepts of form and combinativity of form would facilitate creative expression. The child who had a clear and well-integrated concept of the body image could produce a response appropriate to the demands of the test instructions to draw or to make a person with felt. He could then transform this in such a manner than an unusual but meaningful and coherent portrait would emerge. There is some reason to believe that the use of felt forms facilitates creativity by helping to overcome the motor limitations present in some pre-school children. Further investigation of the conditions when this occurs is needed.

The findings definitely indicate that copying is more difficult than spontaneous representation. Possibly, the task involves more steps than the conceptualization and the symbolic representation required by the DAP and the MAFP. The child must make an inspection of the object, retain a visual memory of it, including the spatial relationship involved, then reproduce this accurately.
Furthermore, it apparently calls for higher levels of integrative ability and visual-motor coordination. The Project Head Start pre-school children tested in this study proved to be seriously deficient in these abilities. Training seems indicated. While it may be argued that copying negates individuality in creative expression, on the other hand, if one agrees with Crutchfield (1966) that transfer of training can take place in creative skills without impairing uniqueness of expression, then training in copying would be worth instituting. There would be added advantages too, in that it might facilitate development of skill in copying the blackboard, as well as working from textbook to workbook, and vice versa. This finding regarding copying is consistent with Getman's (1965) report about mounting evidence of ocular mobility inadequacy in the lower academic third of the school popula-

tion. The problem seems to reside in the child's ability to move his eyes in a facile and effective coordination with each other. Any impairment of this process creates stress which interfere with reception and comprehension of information taken in through the visual receptors. In some cases, the strain of trying to cope with this difficulty may be so great that the only possible solution for the child is task avoidance, a pattern that may become generalized to the school situation.

### Procedures, Study II

A programed text was devised to train children in some basic art forms in which the world might be divided; namely, a circle, a square, and a triangle. Figures 5, 6, and 7 show the programed sequence of discrimination-generalization of a square, triangle, and circle. Each of the sequences shows the pure form, followed by two reasonable approximations using familiar objects, compound form, three-dimensional form, animal form, and subtle form in the outline of the jaw of a clown. Eight pages are shown on each attached picture. Each page of the booklet has four stimuli, the one in the upper center part is the stimulus object that is to be matched with one of the three figures beneath it. The stimulus object has a "cricket" under it that clicks when depressed, and the form that is to match it also has a cricket under it while the other two forms do not. The result is feedback to the learner of the correctness of choice by clicking sound. The stimulus objects and the matching forms are done in vivid colors with green representing the circle, red representing the square, and yellow representing the triangle. The color cue is subtle in that the stimulus object can be any color when it is not an exact duplicate of the form. The continuity of the color cue is that the three figures beneath the stimulus object when the correct response is, say, square always red, or when triangle always yellow, or when circle always green. The reason for not always using the same color stimulus object is to teach the learner from, while still giving a subtle cue of color to help in the discrimination of the correct response. The three sequences of square, circle and triangle are alternated at random so that no sequence of the same form is presented sequentially. A sample of two children, each from a disadvantaged group of children in the age group of five, four, and three were used to test out the efficacy of the program and to determine the age at which the program was too easy.

### Results and Discussion, Study II

It was found that the five-year-olds were able to go through the total program of 24 frames making only two errors, which were quickly corrected by the child. The five-year-old had no difficulty with discerning the roundness, pointedness, or squareness of the clown's jaw and matched the general shape to the correct form. The four-year-olds had somewhat more errors, about 6 errors per 24 frames, however, in some instances even after three trials, were unable to select the right frame. Similarly the three-year-olds made more errors about 12 per 24 frames, some of which were not self-correcting as with the four-year-olds. It would seem then that some revisions will be needed in the sequencing in order to reduce the errors made by the children. The hardest sequencing appeared to be the triangle.

## Conclusions, Study I and II

The programed instruction booklet seemed to be properly devised with some corrections so that it can be used with three and four-year-olds to train them in art creativity. The felt forms which are similar to the geometric figures used in the training program offer a measure of creativity. The next step would be to select a group of three-and four-year-olds and administer the MAFP, then give the programed instruction sequence, then readminister the MAFP and to note differences. If the training program is teaching an aspect of creativity, then the creativity scores on the MAFP should improve.

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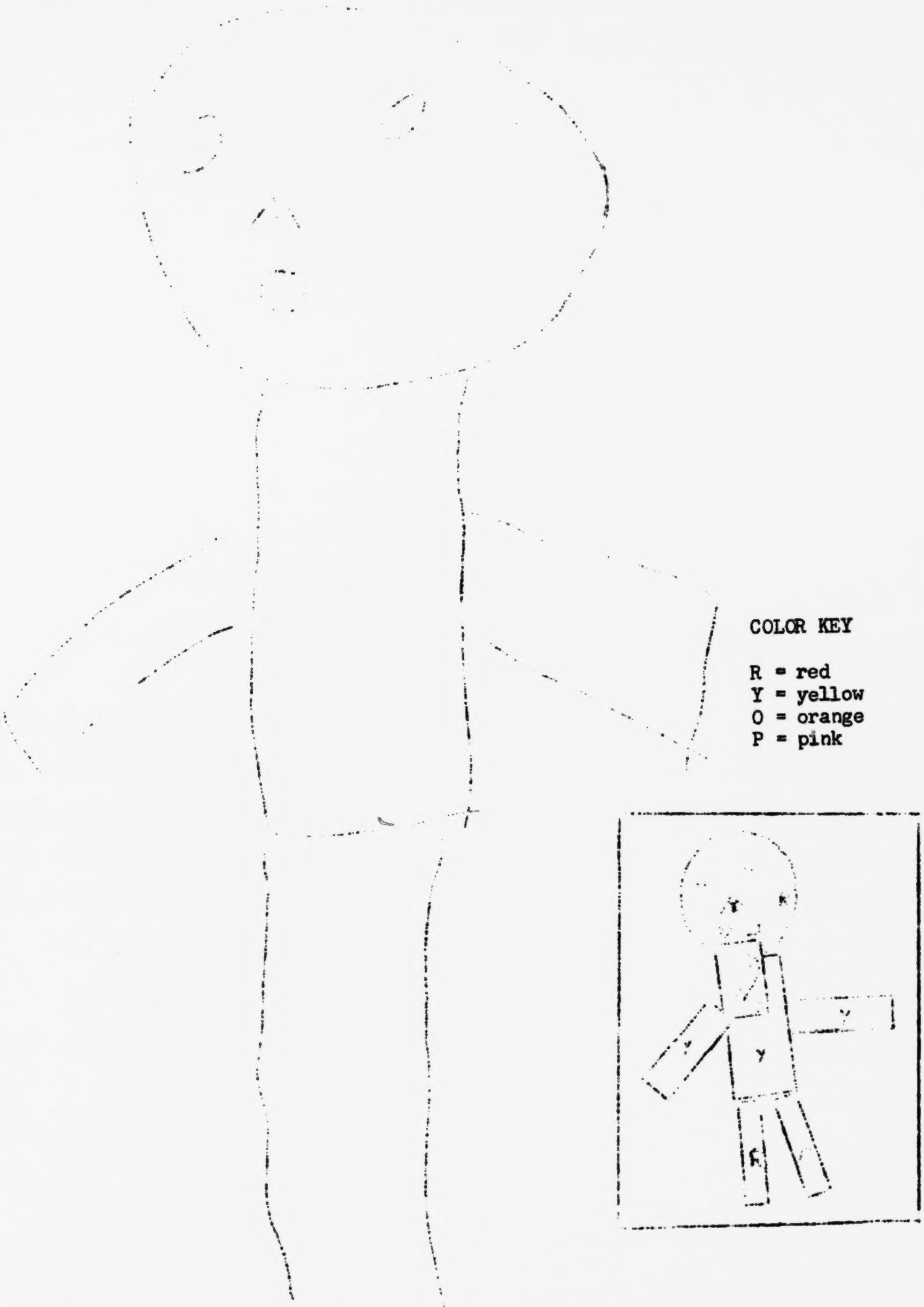
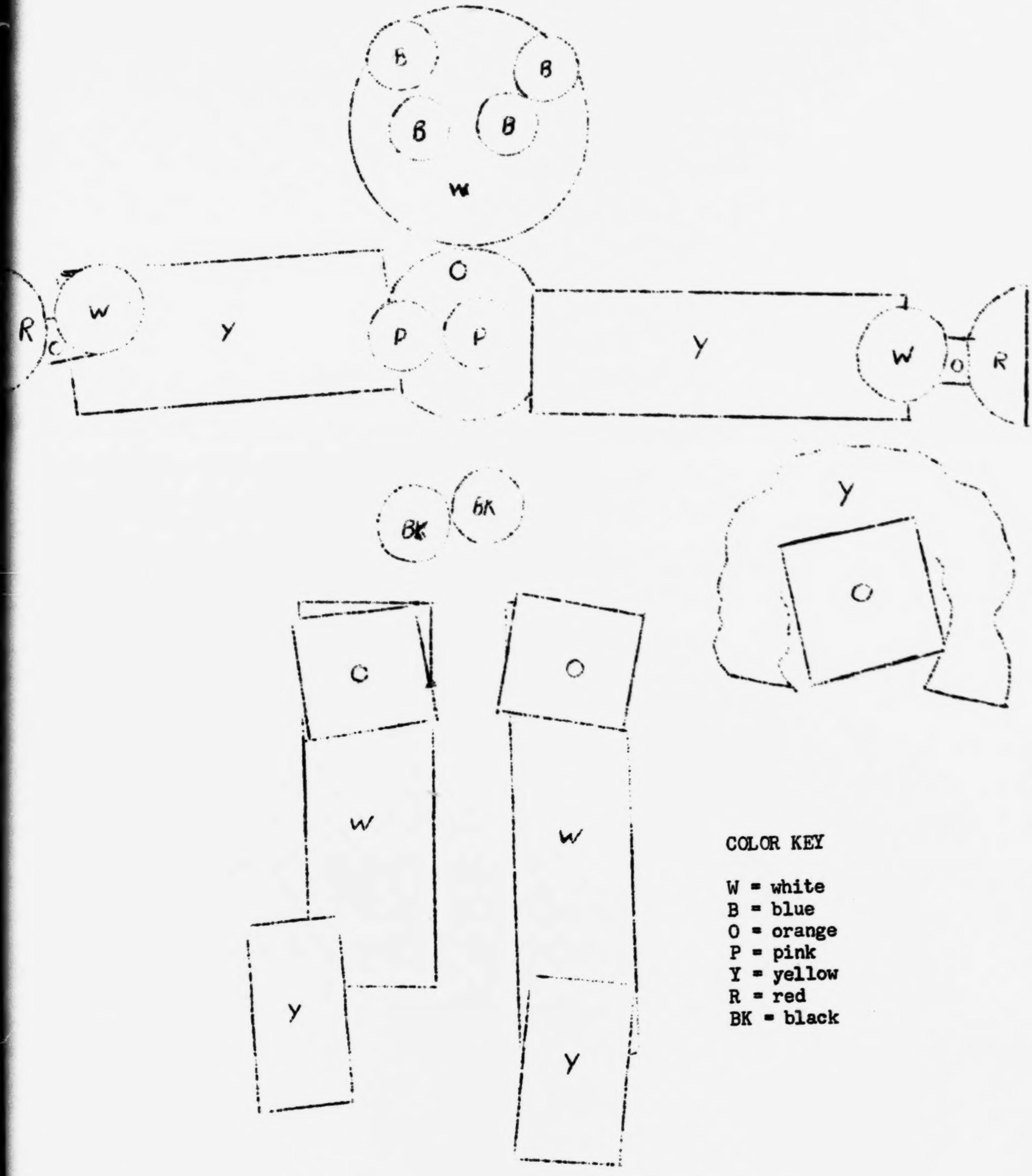


COLOR KEY

R = red
Y = yellow
O = orange
P = pink

Fig. 1. Felt portrait and an adequate reproduction of it by a five-year-old girl.


B
B
B
B
W
O
R
O
W
Y
P
P
Y
W
O
R
BK
BK
Y
O
O
O
W
W
Y
Y

COLOR KEY

W = white
B = blue
O = orange
P = pink
Y = yellow
R = red
BK = black

Fig. 2a. Felt portrait done by a five-year-old girl.

5-26-67
Reproduction
H-32

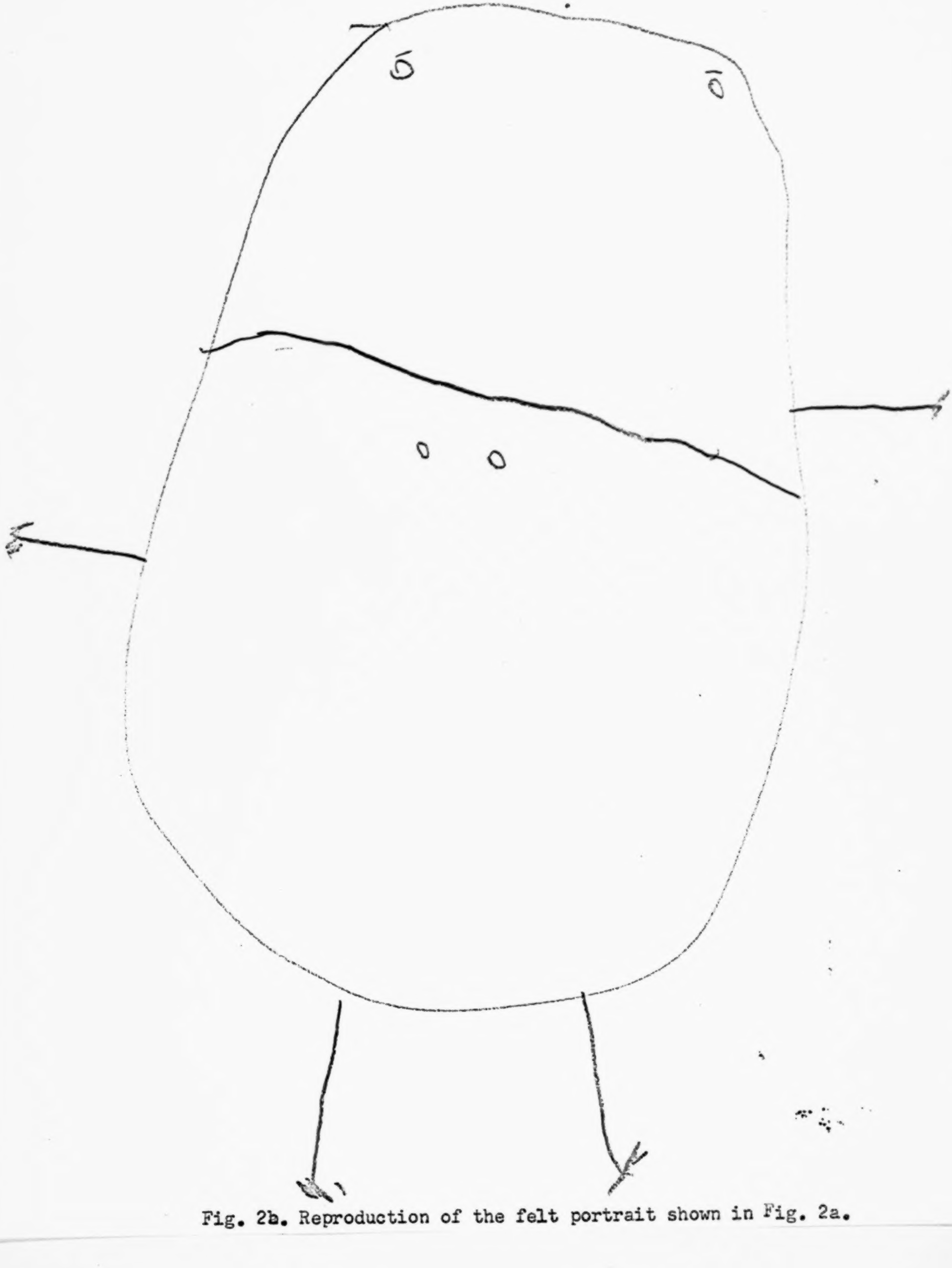
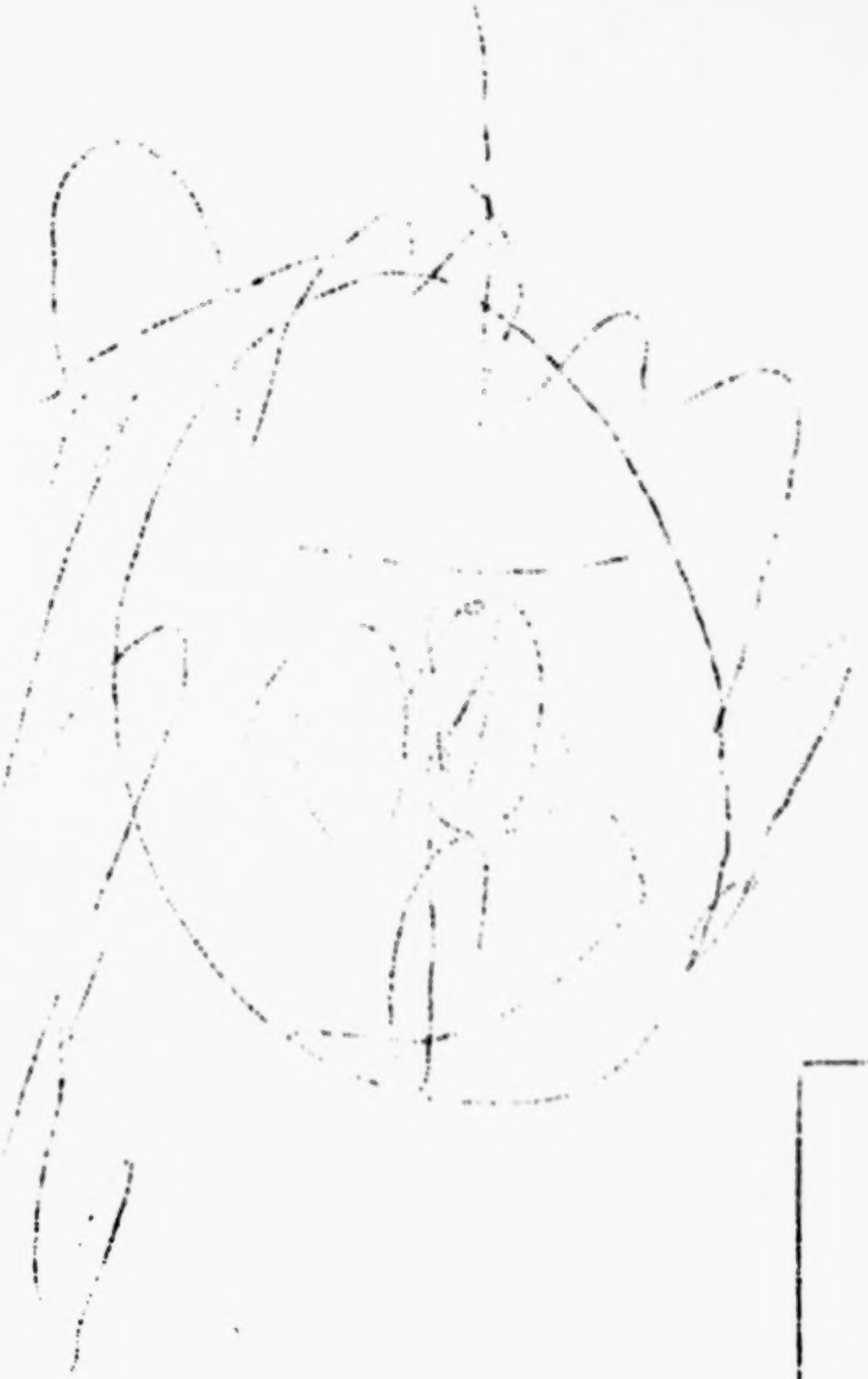


Fig. 2b. Reproduction of the felt portrait shown in Fig. 2a.



COLOR KEY

O = orange
W = white
P = pink
R = red
B = blue
Y = yellow

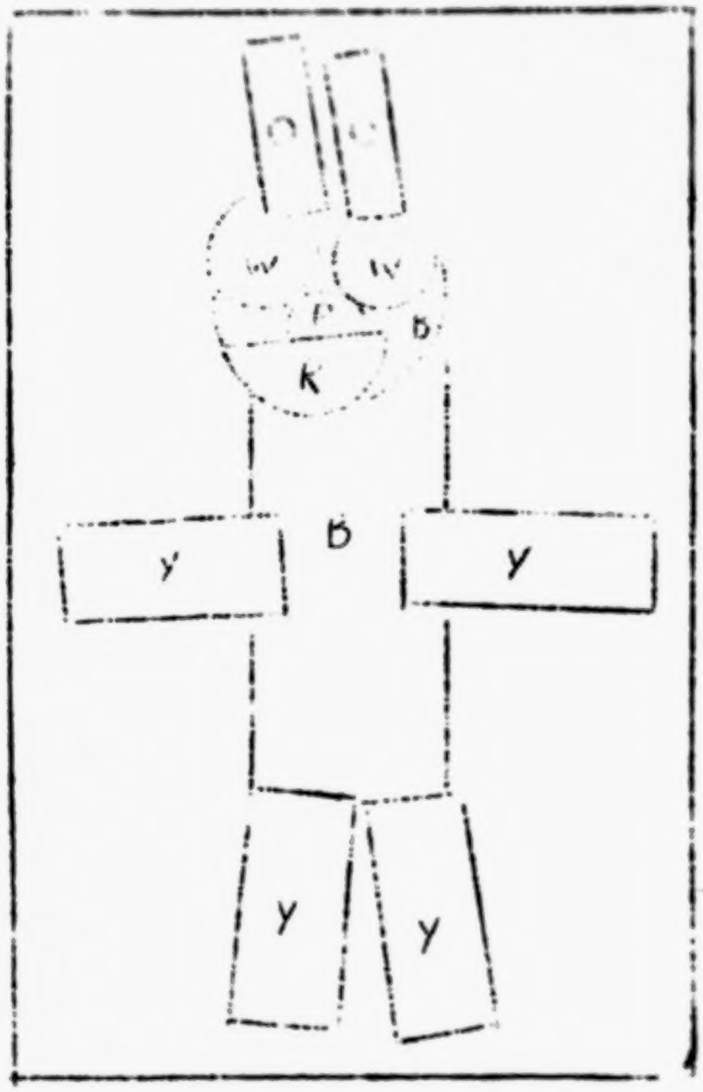


Fig. 3a. Drawing of a person as contrasted to a felt portrait done by a five-year-old boy with an IQ of 77.

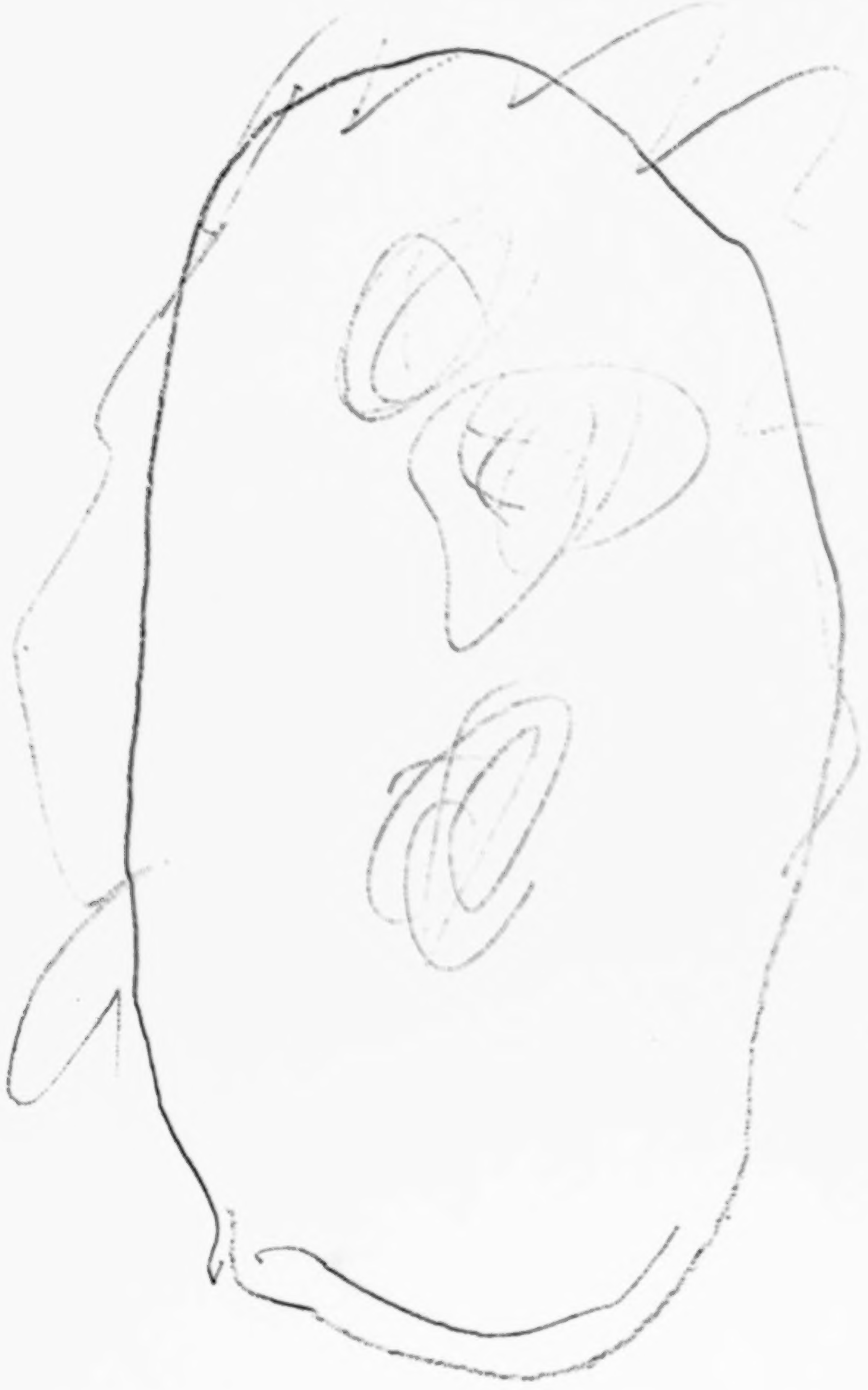
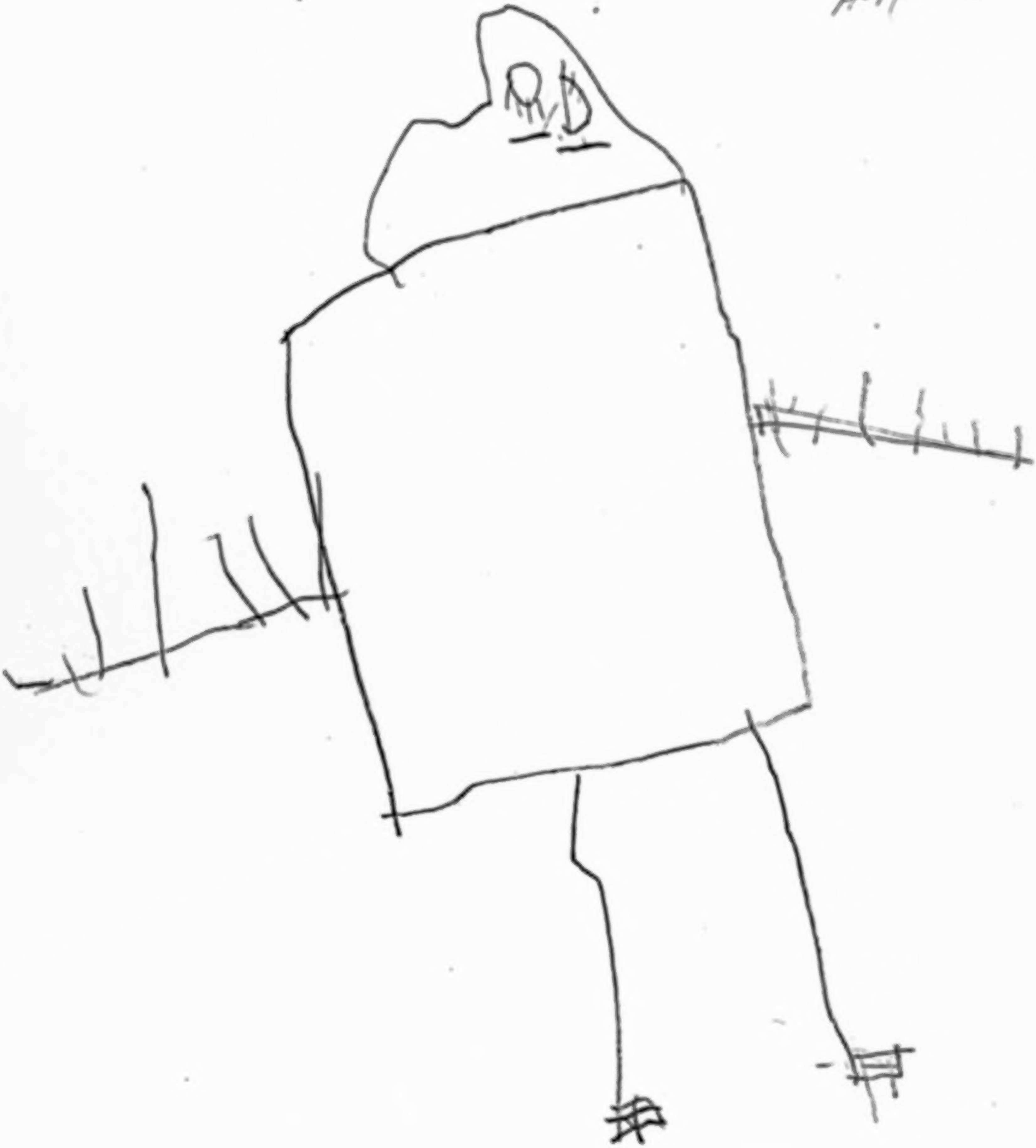
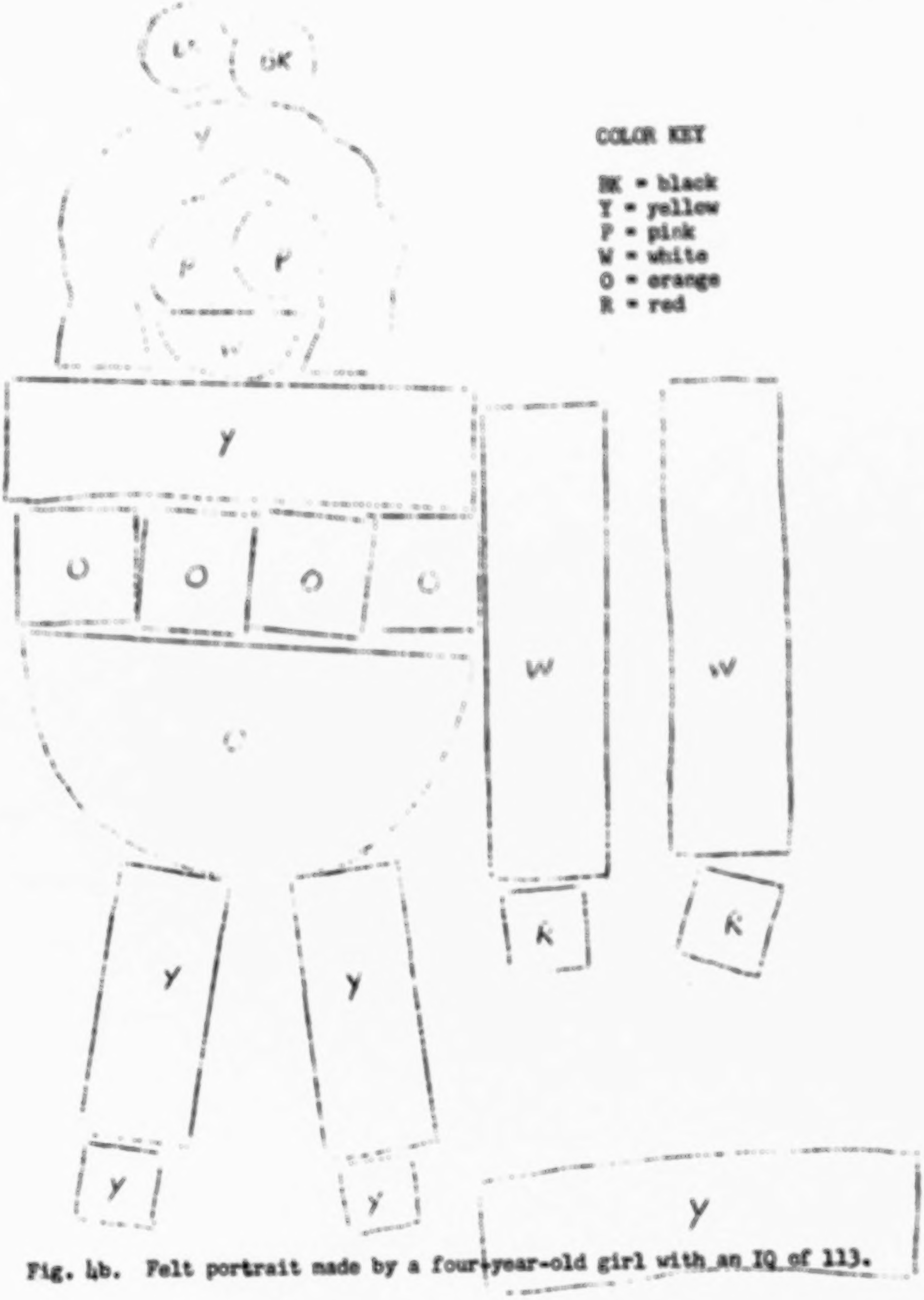


Fig. 3b. Reproduction of the felt portrait shown in Fig. 3a.



1st
6-1-67
4 yr. 2 mo. 22 days
H-14
IQ=

Fig. 4a. Drawing of a person by a four-year-old girl with an IQ of 113.


BK
Y
P
P
W
Y
O
O
O
O
O
W
W
R
R
Y
Y
Y
Y
Y

COLOR KEY

BK = black
Y = yellow
P = pink
W = white
O = orange
R = red

Fig. 4b. Felt portrait made by a four-year-old girl with an IQ of 113.

RB [illegible]

H-14

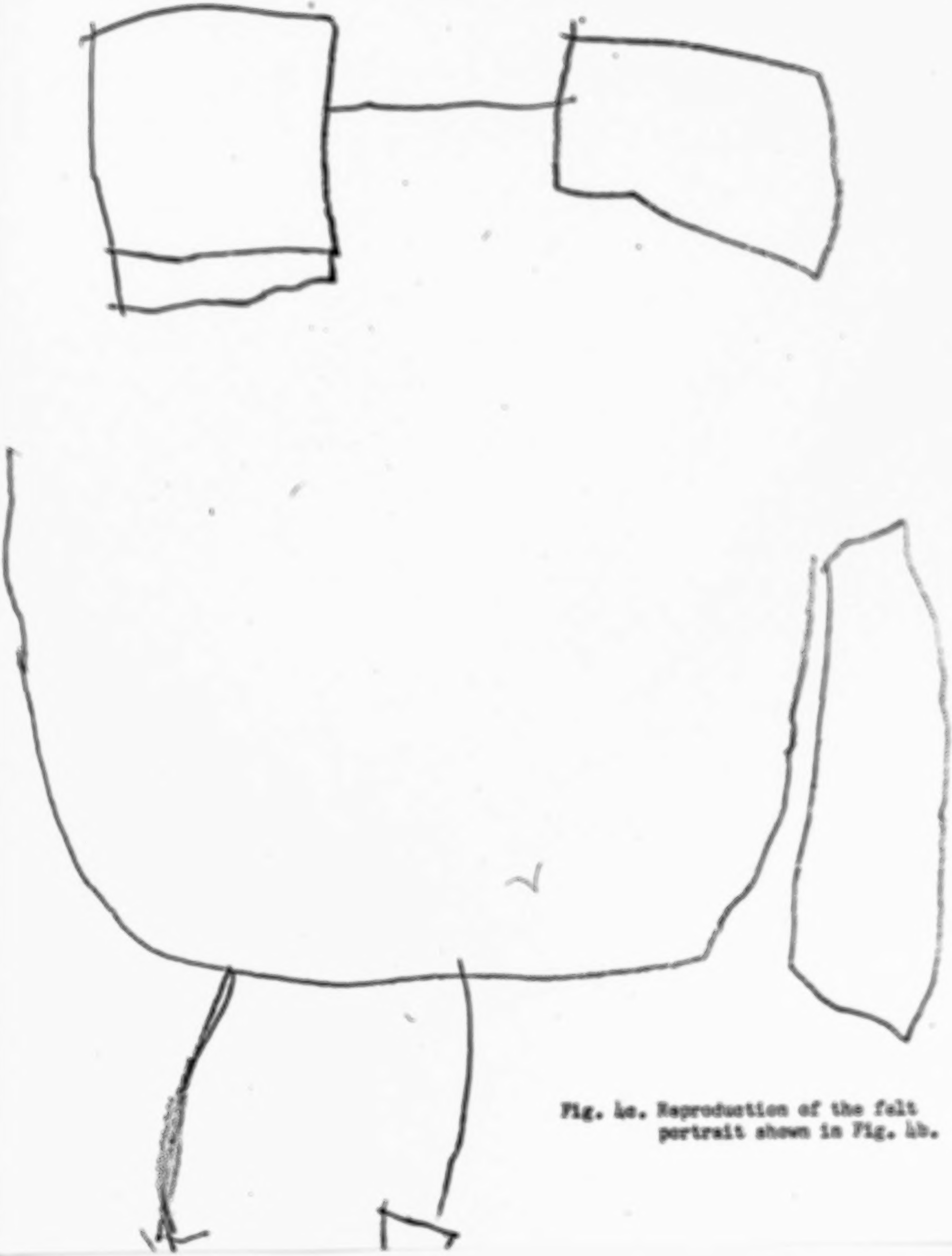


Fig. 4c. Reproduction of the felt portrait shown in Fig. 4b.

## Section II

## Family Studies

Rodman, Hyman, and Voydanoff, Patricia

Family Aspirations and Expectation

Safilios-Rothschild, Constantina

The Dymanics of the Husband-Wife Relationship

Sigel, I. E., Feher, Bela, and Olmsted, Patricia

Parent-Child Interactions, Attitudes and Locus of Control

Watson, J. S.

Early Environmental Stimulation

## Parent Interviews

### Introduction

This section reports the current status of the analysis of the parental questionnaire and the rationale of each of the four separate yet interrelated studies. As of August 15th, 430 interviews have been completed and only 18 possible parents remain to be interviewed. About 6 per cent of the sample (29 people) have been lost due to either refusing to be interviewed (2 per cent) or not being able to be located (4 per cent). Some of the persons not located included a father in Vietnam, another one in Jackson prison, and several in the hospital. The balance had moved and no address could be ascertained.

The relatively good participation on the part of the respondents, we felt was because of the initial approval from the appropriate Board of Education officials highly sensitive to community problems, the cooperation of the schools in interpreting the nature of the study, pre-interview letters explaining the project and introducing the interviewer going out to respondents, and to the good community image of Merrill-Palmer. The low lost rate is particularly impressive when you realize that the interview required two hours of each parent. The interviews were conducted in the home by individual interviewers. A different interviewer talked to each of the parents.

About 407 interviews have been coded. This coding is somewhat tedious because there are 122 items, but some of the items have 10 or more parts to them. The research staff is establishing reliabilities on the coding judgments and working out the computer programs currently.

An overview of the questionnaries that have been coded (407) reveals that the sample includes 61 per cent women and 39 per cent men. All respondents were Negro. Further, that of this number, 81 per cent are married while the remainder fall into the categories of divorced, widowed, separated, or single.

Looking at the education of the respondents we find that 27 per cent of the men and 24 per cent of the women had some college, graduated from college, or held advanced degrees. The median education for both men and women was high school graduation, and 26 per cent of the men and 16 per cent of the women had only junior high school training or less.

Using Hollingshead's social class scale, weighting in occupation (7) and education (4) shows that about 5 per cent of the sample falls in the highest class, Class I; and 78 per cent of the sample falls in the lower two classes, Class IV and Class V. The income distribution shows that 73 per cent of the husband were in the $5000 - $10,000 income range. 16 per cent were making under $5000.

The median number of children per family was four, with a range of from one to 12 children. These figures do not include the number of persons in the household, as some of the mothers would be caring for children of her husband or other relatives and their children might be in the household.

This questionnaire represents a compendium of interests of four separate investigators and the following section presents the rationale for the investigator's questions and indicates the items that will be analyzed for the completed report. The questionnaire is included in Appendix A so that the exact questions can be found.

Marjorie C. Clos, Ph.D

# Family Aspirations and Expectations*

Hyman Rodman

Patricia G. Voydanoff

The aspirations and expectations that parents have for their children are an important influence on the development of young children and upon their school achievement. In the early years especially, children learn about their potential and their place in the world through their parents. This project is designed to document the nature of parental aspirations for their children and to explore the relationship between family variables and these parental expectations.

Previous research in the area of aspirations and expectations has focused almost exclusively upon a single level of aspiration. Respondents are asked a question which requires a single response, e.g., "How far do you hope to go in your schooling?" The data resulting from such questions generally indicate that lower-class individuals have a lower level of aspirations than middle-class individuals.

However, another interpretation of these findings is possible. Lower-class individuals may have a wider range of aspirations than middle-class individuals. The lower-class aspiration peak may generally be as high as the middle-class peak--but the lower-class base may be lower. If this is so, then by chance alone it would appear that lower-class

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

individuals have a lower range of aspirations than middle-class individuals, because they must select their single response from within a range that stretches lower than the middle-class range. The questions asked in the interview are designed to collect information on lower-class aspirations; along with other data being collected they are designed to test the hypothesis that lower-class parents have a wider range of aspirations than middle-class parents.

The implications of the two conclusions (lower level vs. wider range) would be quite different. To the extent that lower-class parents have a wider range of aspirations, with a peak that is about as high as the middle-class peak, there is a built-in potential for mobility. Parental influence would therefore be in the direction of a range of possibilities, rather than merely being in the direction of lower levels of education, occupation, and income.

Other independent variables will also be studied in relation to parental aspirations and expectations. These include questions about how much influence parents feel they will have over their child's future educational and occupational achievements, and the family variables discussed above such as role structure, child-rearing practices and attitudes, and communication patterns within the family.

## Table II-1

## Interview Items Designed to Elicit Educational, Occupational, and Income Aspirations and Expectations

| | |
|---|---|
| Educational Aspirations and Expectations | 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 |
| Occupational Aspirations and Expectations | 98, 99, 100, 101, 102 |
| Income Aspirations and Expectations | 103, 104, 105, 106, 107, 108 |

# The Dymanics of the Husband-Wife Relationship*

Constantina Safilios-Rothschild

A number of different research topics are being investigated through the relevant questions included in the interview questionnaire (contained in Appendix A). Each of these topics will result in a separate research paper and it will be discussed separately.

(1) Comparison of husbands' and wives' perception of the familial power structure (as measured by decision-making).† The patterns of disagreement will be examined in terms of the spouses' socio-psychological characteristics as well as in terms of the nature of the marital relationship (as measured by degree of marital satisfaction and degree of conflict). Also it is important to investigate the characteristics (dynamic and socio-psychological) of spouses who agree in their perception of the power structure versus those who disagree.

Discrepancies in the spouses' perception of power structure will also be examined with regard to their discrepancies (or agreement) in their evaluation of degree of marital satisfaction. Interview questions used for this paper will be: 79, 88, 89, 91, 92, 93, 114b, 116, 117, 118, 119, 121, 122c, race and social class.

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* The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

† Question 88 has been separately coded in a special way in order to provide us with information about the spouses' degree of agreement about power structure as well as about marital satisfaction.

(2) A methodological paper concerning the methodological controversy as to whether or not the wives' answers alone are sufficient in giving an accurate and reliable description of dynamic family variables or the husbands' answers are absolutely necessary in order to move away from the stereotypic picture of family life (especially in the lower class). Similar data collected in urban Greece will also be included in this paper. (Same interview questions to be used as in the previous section.)

(3) Patterns of power and influence in the American family. Family research has focused mostly upon power structure and very little upon the influence techniques spouses use in trying to "get their way."* Are these techniques class-linked? or sex-linked? And what relationship is there between type of influence technique used and type of family power structure? In short, what techniques seem to be most efficient?

Interview questions to be used are: 88, 90, 91, 92, 93, 114b, 116, 117, 118, 119, 121, 122c, race and social class.

(4) A comparison of patterns of power and influence in the urban American and Greek family. Findings in (3) will be compared with similar data collected in urban Greece in order to formulate some theoretical generalizations. (Same questions is in [3]).

(5) The determinants of marital satisfaction. For this paper dynamic as well as socio-psychological factors influencing marital satisfaction

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* Question 90 was content-analyzed; 18 mutually exclusive categories exhausted all the answers given by both men and women.

will be separately examined. Does a high degree of marital conflict or inability to influence the other spouse diminish marital satisfaction? What type of power structure is more often associated with marital satisfaction, according to husbands and according to wives? Do men or women tend to consistently overrate or underrate their marital relationship? And are there social class, occupational, or educational differentials in the evaluation of the marital relationship? What are the most crucial determinants of marital satisfaction?

Interview questions to be used are: 88, 89, 65-78, 90, 91, 92, 114b, 116, 117, 118, 119, 121, 122c, race and social class.

(6) Parental and filial role-definitions. The definitions of the important elements in the parental and filial roles will be examined with regard to the socio-psychological characteristics of the parents and their aspiration levels for their children (Rodman's interview questions: 16, 18, 21). Other questions to be used are: 63, 64, 65-78, 114b, 116, 117, 118, 119, 121, 122c, race and social class.

Table II-2

Interview Items Designed to Elicit Data on Family Variables

| | |
|---|---|
| Mutual Responsibility of Parents and Children | 63, 64 |
| Attitude toward Mother Working | 79 |
| Decision-Making and Resolution of Conflict | 88, 89, 90, 95, 96, 97 |
| Degree of Marital Satisfaction | 91, 92, 93, 94 |

II, C

# Parent-Child Interactions, Attitudes and Locus of Control[*]

Irving Sigel

and

Bela Feher

The array of items employed in this section deal with a number of topics of value to furthering our understanding of the backgrounds from which inner city children come. We are frequently beset by paucity of information in planning programs for the parents and more important perhaps, in understanding the child. Despite its limitations, the interview procedure provides at least one major source of data. This section of the interview taps a number of topics, some germaine to cognitive development, others of interest in themselves.

The cognitive studies involved in this program of research revolve around problems of classification and grouping behavior. As can be seen from the report by Sigel and Olmsted, the interest in classification leads to a concern with the level of symbolization on which these children function, i.e., we are interested in representational behavior as expressed in classification tasks.

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[*] The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

Previous research by Sigel has shown that children employ a variety of bases for classification, referred to as styles of categorization. These studies have demonstrated that styles of categorization are related to a number of personality characteristics. However, these findings are based on correlational studies, and fail to shed any light on antecedent variables which might account for some of the newly discovered relationships. Previous work has also shown that styles of categorization extend across socio-economic classes with some of the same personality correlates.

In the interview questionnaire, effort is being directed toward identification of the familial antecedents of categorizing styles of both lower and middle-class children, thereby shedding light on "causal" relationships and perhaps enlightening us vis-a-vis middle class conditions. These interests guided the formulation of the questions listed within this section. It was decided to focus the interview on the pre-school or early school age child from each family who had participated in one of the other studies of the on-going research program of Merrill-Palmer. A trait description of the child was obtained from the parent, providing a picture of the child from the parent's point of view. The trait description is comparable to some of the rating scales used in previous work which has been found to be related to various styles of categorization. (Questions 1-12) The trait description was supplemented by the parent's reaction to various deviant traits, which will help define the range and type of traits the parent finds acceptable. (Question 49)

One of the ways children learn about their social and physical world is through play. Question 42-45 are intended to yield information which should be related to the child's approach to objects and his grouping of them. As the child begins to locomote in the environment and the parent begins to direct his activities, the parents employ influence techniques, i.e., control strategies which are interventions or efforts at behavioral modification. The significance of these techniques has been established as far as personality characteristics are concerned, but their relationship to styles of categorization have yet to be examined. The basis for assuming some relationship is that these techniques are sources of orientation, exlicating do's and don'ts in personal and non-personal situations. Since these parental intervention techniques do influence certain personality traits and since some of these personality traits (eg. dependency, achievement orientation, cautiousness) also relate to styles of categorization, a linkage is expected. Both sets of data will be available for the child. Thus, items 46-53, 57-62, and 81-87 are concerned with such issues as obedience, punishment, and techniques of control.

The interest the parent has in the child's activities and the degree to which the parent is willing and able to disengage from his own for the child's sake, is assessed by item 54--efforts to get at parental orientation. Other miscellaneous items dealing with parent's explanation of natural phenomena, eg. death, storms, are used to assess the parent's perception of the child's comprehension level as well as provide insight into the child's intellectual environment. (Question 55, 56)

A number of other questions revolving around the parents are perhaps less relevant for specific cognitive predictions, but are more revealing of the parent *qua* parent, e.g., his feeling of competence as an agent of influence. (Question 109, 110) Related to this is a set of items dealing with locus of control (Question 25-36). These items assess the degree to which the parent holds the child in contrast to the teacher, responsible for the success or failure of the child's activities in the school. These and some of the other questions are employed because this was taken to be an ideal opportunity to extend our knowledge of the family structure and function variables as they interrelate, and as they influence the school.

# Early Environmental Stimulation[*]

John S. Watson

Much attention has been paid to the effects of social stimulation during infancy on contemporary and subsequent socio-emotional and cognitive-perceptual development. In contrast, very little is known concerning the effects of early non-social stimulation. Yet, it would seem at least tenable, particularly as regards cognitive-perceptual development, that the effects of early stimulation may be as much a consequence of the stimulating properties of the physical environment which a family constructs for its young as it is a consequence of the direct social stimulation which that family provides. The aim of this study is to obtain descriptive data concerning ways in which families differ in the nature and timing of the physical environments they arrange for their young during the initial two years of child rearing.

The parent interview items devoted to this study are questions 37 through 41 (interview questionnaire contained in Appendix A). Due to the retrospective nature of this interview, questions were limited to the avaiability of certain categories of toys since the existence and timing of these "gifts" might be expected to be more accurately recalled than more subtle aspects of the physical environment such as availability of color, shadows, squeaking springs, sound level, etc. Moreover, toys differ sufficiently to provide for a distinction of theoretical interest--environments which encourage instrumental ("stimulus control") responding and those which do not.

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[*] The research reported here was supported in part by OEO Head Start Subcontract #1410 with Michigan State University Head Start Evaluation and Research Center, 1966-67.

Data analysis will focus on toy-environment differences as these relate to the variables of social class, parent education, and sex of child. Additional analyses of interest will be possible such as relating the toy-environment data to parental ratings on achievement aspiration and the child's performance scores in various cognitive-perceptual tasks in which these children have participated.

# Appendix B

## Rating Scale for Creativity

Head Start Project

1966 1967

## Appendix B

Rating Scale for Creativity:

Each work is first classified in terms of three major categories:

1 Placement: This includes those wherein the child's aim was merely the placement of patterns on the board yet, awareness of the figure and ground relationship is evident.

2 Design: This includes those wherein the child's aim was simply to make a structured design by combining shapes, sizes, and colors.

3 Pictorial: This includes those wherein the child's aim was to represent a theme or themes which are clearly defined and easily recognizable.

Following classification, each pictorial product will be rated in terms of:

1 Originality. This is measured by comparing the work of each subject with those of all the other subjects to see whether or not he combined shapes, sizes, and colors in a manner different from everyone else's.

1 Elaboration. This is measured by noting the addition of significant details.

1 Elaboration. This is measured by noting the presence of an impression of movement.

1 Elaboration. This is measured by noting the indications of facial expressions.

1 Structural variation. This is measured by noting the subject's ability to vary the shapes, sizes, and colors while at the same time preserving the gestalt.

1 Thematic variation. This is measured by noting the subject's ability to develop new themes and relate them to the central theme established by the test instructions.

1 Balance. This is measured by observing the balance between the elements of the over-all design and includes how well the colors blend or contrast.

# Appendix A

## Parent Interview

## Head Start Project

1966 1967

Sigel
1967

# PARENT INTERVIEW

## HEAD START PROJECT

INTRODUCTORY STATEMENTS (memorize):

At the door: I'm looking for Mr(s). __________. (find parent or guardian) I'm Mr(s). _______. You probably received a note from X's principal telling you I was going to call on you. I'm from the Merrill-Palmer Institute (hand over ID). Merrill-Palmer is doing a study to learn more about young children. We're talking to parents all over the city of Detroit. I'd like to come in and talk with you.

Selection of interviewee and place:
Interview only X's parents or step-parents, if living in the household. If only one living in household, interview only that one. If neither (step) parent in household, interview person(s) (both man and woman, if living in household) who have major responsibility for child's upbringing.

(If both parents present, interview husband first.)

(General approach) I would like to talk to both of you, but I know mothers and fathers can tell me different things about their children, so I'd like to talk to each of you separately. Where can we talk where we won't bother anyone else?

Answers to possible questions:
Merrill-Palmer is a kind of college which helps train teachers and social workers. This kind of information will help us to train them better.

This information will be kept completely CONFIDENTIAL. Only our research staff will see it and only general information will be reported. Names will not be attached to information, and no one outside our research staff will see any particular person's answers.

Working into questionnaire:
I've never met X, would you tell me a little bit about him/her?
(Casually pull out questionnaire and cards and prepare for interview while listening.)

Note sex of X (ask if necessary): M F

There are some specific things I'd like to know about X. I have a list here which I'll read.

| a. Would you say X | | b. And would you say X is like this some | quite a bit | or much of the time? |
|---|---|---|---|---|
| 1. Is physically TENSE and strained | ___ | | | |
| OR | | 1 | 2 | 3 |
| physically RELAXED? | ___ | | | |
| 2. Has a GOOD MEMORY | ___ | | | |
| OR | | 1 | 2 | 3 |
| is FORGETFUL? | ___ | | | |
| 3. DOMINATES others and COMPETES vigorously | ___ | | | |
| OR | | 1 | 2 | 3 |
| SUBMITS to the control of others and is PASSIVE? | ___ | | | |
| 4. Is UNAMBITIOUS, not hard-working | ___ | | | |
| OR | | 1 | 2 | 3 |
| STRIVES hard for success and is AMBITIOUS? | ___ | | | |
| 5. Is TALKATIVE and speaks easily | ___ | | | |
| OR | | 1 | 2 | 3 |
| QUIET and has difficulty finding words? | ___ | | | |
| 6. Is WORRIED about taking chances and failing | ___ | | | |
| OR | | 1 | 2 | 3 |
| NOT WORRIED about failing? | ___ | | | |
| 7. DAYDREAMS and often lost in thoughts and dreams | ___ | | | |
| OR | | 1 | 2 | 3 |
| DOESN'T DAYDREAM | ___ | | | |
| 8. Is CAUTIOUS and considers a situation carefully before acting | ___ | | | |
| OR | | 1 | 2 | 3 |
| IMPULSIVE and acts immediately or quickly? | ___ | | | |

| | | some | quite a bit | or much of the time? |
|---|---|---|---|---|
| 9. Is INDEPENDENT and tries to get along without help<br>OR<br>DEPENDENT and often needs or wants help doing things he might be able to do alone? | ____<br><br>____ | 1 | 2 | 3 |
| 10. Is NERVOUS, FIDGETY and FEARFUL<br>OR<br>CALM and not usually worried? | ____<br><br>____ | 1 | 2 | 3 |
| 11. PAYS ATTENTION to his/her work<br>OR<br>is DISTRACTIBLE, a dreamer? | ____<br><br>____ | 1 | 2 | 3 |
| 12. LEARNS QUICKLY, picks up things in the first few times<br>OR<br>LEARNS SLOWLY and needs many experiences with new materials? | ____<br><br>____ | 1 | 2 | 3 |

(If necessary): As you've probably noticed, my questions are written down so that everyone is asked exactly the same questions. There are NO RIGHT or WRONG answers to these questions. I would like you to answer each question according to how YOU feel, and not according to how someone else might feel.

Now, I'd like to ask you some questions about school.

13. Thinking about X, if he/she does his/her VERY BEST, how far do you think he/she could go in school?

6 7 8 9 10 11 12 13 14 15 16 17+

14. Now taking the other side of the picture, if he/she DOESN'T do very well in school, how far do you think he/she could go?

6 7 8 9 10 11 12 13 14 15 16 17+

15. According to what you can tell now, how far do you think he/she REALLY will go in school?

6 7 8 9 10 11 12 13 14 15 16 17?

16. Now tell me how far you would LIKE to see X go in school if it was completely UP TO YOU and you could have him/her to as far in school as you WISHED?

6 7 8 9 10 11 12 13 14 15 16 17+

17. What do you think the CHANCES are of X REALLY FINISHING (answer to #16)? Here's a card with answers from which you may choose (show Card #1). (Say: Would you be "almost sure", "fairly sure", 50/50, or would you think there's "not much chance" or "almost no chance"?).

Sure 1 2 3 4 5 No chance

18. Now I'd like to know how HAPPY or UNHAPPY you would be in each of the following situations? Look at Card #2 for the answers (read alternatives aloud). (When 2 one's in a row, quit.) (From now on, interviewer will be expected to use the pronoun proper for the sex of the child and the terms "he" and "his" will be used on the interview form)

| | Happy | | | | Unhappy |
|---|---|---|---|---|---|
| a. How would you feel if he stops school after finishing the 6th grade? | 1 | 2 | 3 | 4 | 5 |
| b. How would you feel if he stops school after finishing the 9th grade? | 1 | 2 | 3 | 4 | 5 |
| c. If he stops school after finishing the 12th grade? | 1 | 2 | 3 | 4 | 5 |
| d. If he stops school after finishing 2 years of college? | 1 | 2 | 3 | 4 | 5 |
| e. If he stops school after finishing 4 years of college? | 1 | 2 | 3 | 4 | 5 |
| f. If he stops school after finishing more than 4 years of college? | 1 | 2 | 3 | 4 | 5 |

19. What do you think the CHANCES are of X REALLY FINISHING . . . (When 2 fives in row, quit.) Show Card #3 (same as Card #1)

| | Sure | | | | No chance |
|---|---|---|---|---|---|
| a. 9th grade? Look at Card #3 for this one. | 1 | 2 | 3 | 4 | 5 |
| b. 12th grade? | 1 | 2 | 3 | 4 | 5 |
| c. 2 years of college? | 1 | 2 | 3 | 4 | 5 |
| d. 4 years of college? | 1 | 2 | 3 | 4 | 5 |
| e. more than 4 years of college? | 1 | 2 | 3 | 4 | 5 |

20. Some people say that it's up to the family to bear the cost of their children's education. This might mean providing room, clothes, paying for tuition, and buying books. Others say it's up to the child to make his own way through school by earning money to pay for whatever it costs. (Card #4)

In your opinion how should the cost be divided when the child is in:

| | All family | | | | All child |
|---|---|---|---|---|---|
| a. 9th grade (Jr. High)? | 1 | 2 | 3 | 4 | 5 |
| b. 12th grade (High School)? | 1 | 2 | 3 | 4 | 5 |
| c. 2nd year of college? | 1 | 2 | 3 | 4 | 5 |
| d. 4th year of college? | 1 | 2 | 3 | 4 | 5 |
| e. Beyond 4 years of college? | 1 | 2 | 3 | 4 | 5 |

21. People have different ideas about how important it is to go to school. If you had to give up going to places like restaurants and movies; if you had to get along with less clothing and furniture; with an older car and an older house; if you had to do extra work, like taking an extra job . . . (When 2 fives in row, quit.)

| | All | | | | None |
|---|---|---|---|---|---|
| IF YOU HAD TO DO THINGS LIKE THAT, how many things of that kind would you do in order to help X finish junior high school? (Card #5) | 1 | 2 | 3 | 4 | 5 |
| How many things of that kind would you do in order to help X finish high school? | 1 | 2 | 3 | 4 | 5 |
| . . . two years more than high school? | 1 | 2 | 3 | 4 | 5 |
| . . . four years of college? | 1 | 2 | 3 | 4 | 5 |
| . . . continue going to school after four years of college? | 1 | 2 | 3 | 4 | 5 |

22. In general, how much influence do you think parents have over: (Card #6)

| | Great deal | | | | None |
|---|---|---|---|---|---|
| a. the amount of schooling their children will WANT? | 1 | 2 | 3 | 4 | 5 |
| b. the ACTUAL AMOUNT of schooling their children will GET? | 1 | 2 | 3 | 4 | 5 |
| 23. How much influence do you think YOU will have over the amount of schooling your child WILL FINISH? | 1 | 2 | 3 | 4 | 5 |
| 24. How much influence would you LIKE to have over the amount of schooling your child WILL FINISH? | 1 | 2 | 3 | 4 | 5 |

25. When a child has trouble understanding something in school, is it usually

_____ a. because the teacher didn't explain it clearly, or

_____ b. because the child didn't listen carefully?

26. If a child tells another child that he is dumb, is it more likely that the child says that

_____ a. because he is mad at the other child, or

_____ b. because what the other child did wasn't very smart?

27. When a child learns something quickly in school, is it usually

_____ a. because the child paid close attention, or

_____ b. because the teacher explained it clearly?

28. When a parent reads a child a story and he can't remember much of it, is it usually

_____ a. because he wasn't interested in the story, or

_____ b. because the story wasn't well written?

29. If a teacher tells parents that their child's work is fine, is it

_____ a. because the child did a good job, or

_____ b. because teachers usually say nice things to encourage parents?

30. When a child forgets something he heard in class, is it

_____ a. because the teacher didn't explain it very well, or

_____ b. because the child didn't try very hard to remember?

31. When a parent reads a child a story and he remembers most of it, is it usually

_____ a. because the story was well written, or

_____ b. because he was interested in the story?

32. If people think that a child is smart or clever, is it

_____ a. because they happen to like him, or

_____ b. because he usually acts that way?

33. If a teacher didn't pass a child to the next grade, would it probably be

_____ a. because the child's school work wasn't good enough, or

_____ b. because she "had it in for the child"?

34. When a child remembers something he heard in class, is it usually

_____ a. because he tried hard to remember, or

_____ b. because the teacher explained it well?

35. If a teacher tells parents that their child should try to do better, would it be

_____ a. because this is something she might say to get pupils to try harder, or

_____ b. because his work wasn't as good as usual?

36. If a teacher passed a child to the next grade, would it probably be

_____ a. because she liked the child, or

_____ b. because of the work he did?

Let's go back to when X was younger.

37. When X was a young infant, did you put a mobile (hanging toy) over his crib?

YES NO If yes: at approximately what age? ____________________

Was it the windup kind? YES NO

If yes: did it make a music box sound? YES NO

38. Did you put toys in his crib before the time he became able to grasp and handle them?

YES NO

39. Did he ever have a 'squeeze toy' that made a sound when pressed?

YES NO

If yes: when did he first get this toy?

a. at approximately what age? ________________

b. approximate maturity: in crib crawling walking

Did he ever spend much time squeezing the toy?

YES (Squeezed over and over again on most occasions)

NO (Squeezed a few times and stopped on most occasions)

If yes:

was this interest shown right away? _____

after a short time? _____

months later? _____

40. Did he ever have a music box? YES NO

If yes:

at what age did he get it? 1 2-3 4+ months

Did he ever learn to wind it? YES NO

at what age? ______________

41. Before X was 2 years old, did he have any of the following toys?

(If so) How many? (If 1 or more: When did he FIRST get one? Or, if toys in family: When did X FIRST come across it?)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | (2,3) | (4+) | age when 1st rec'd. |
| a. | stuffed animals | 0 | 1 | few | many | ______(months) |
| b. | dolls | 0 | 1 | few | many | ______ |
| c. | peg boards (blocks or rings fit on pegs) | 0 | 1 | few | many | ______ |
| d. | simple puzzle where a triangle, circle or square is to be fitted in place | 0 | 1 | few | many | ______ |
| e. | picture puzzle of animals or cartoon or nursery rhyme characters | 0 | 1 | few | many | ______ |
| f. | sorting box with holes for blocks of different shapes | 0 | 1 | few | many | ______ |
| | | | | (1 or 2 sets) | (3 or more sets) | |
| g. | crayons, paints | 0 | | some | many | ______ |
| h. | pull toys | 0 | | some | many | ______ |
| i. | building blocks | 0 | | some | many(20+) | ______ |
| j. | trucks, cars, planes | 0 | | some | many(3+) | ______ |
| k. | tinkertoys or construction toys (lego blocks) | 0 | | some | many(20+) | ______ |
| l. | sand box | Yes | No | | | |
| m. | swing | Yes | No | | | |

42. What is your child's favorite play activity? (Probe for complete description of actual activity, beyond label.)

_______________

_______________

_______________

_______________

_______________

43. a. Does your child copy you when you work around the house? YES NO

(If so) How often? Often Sometimes Seldom

b. Would you give me 2 or 3 examples? (Probe for NATURE of BEHAVIOR)

_______________

_______________

_______________

_______________

_______________

44. Does your child ever use common things around the house as part of his play, pretending they are things he doesn't have? (If further help needed) Like using a broom for a horse? YES NO

(If so) Would you give me 1 or 2 examples? (Probe)

_______________

_______________

_______________

45. Does X ever pretend that he is someone else? (If further help needed) like a fireman, mother, father? YES NO Who? Give me an example. (Do not accept only examples given as help.)

_______________

_______________

_______________

46. When you spend time with X who usually decides what you'll do together, you or X?

Parent Child Both (if insists only)

47. a. How do you feel the responsibility for teaching a child to read should be divided between the home and the school? (Card #7)

All home 1 2 3 4 5 All school

b. (If 1, 2, 3, or 4) What things would you do in helping your child learn to read?

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

48. If X were just about to start kindergarten and acted as though he were afraid, what would you do?

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

49. a. How happy or unhappy would it make you if the kindergarten teacher told you your child was: (Card #8)

b. Would you do something about it? (If yes) What would you do? (Get specific behavior)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | happy | | | unhappy | | | | if yes: action |
| a. | a loner | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| b. | a cry-baby | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| c. | friendly | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| d. | quiet | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| e. | a slowpoke | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| f. | a bully | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| g. | a daydreamer | 1 | 2 | 3 | 4 | 5 | YES | NO | |
| h. | cheerful | 1 | 2 | 3 | 4 | 5 | YES | NO | |

| 49 continued | happy unhappy | | if yes: action |
|---|---|---|---|
| i. stubborn | 1 2 3 4 5 | YES NO | |
| j. overactive | 1 2 3 4 5 | YES NO | |
| k. shy | 1 2 3 4 5 | YES NO | |
| l. cooperative | 1 2 3 4 5 | YES NO | |
| m. fearful | 1 2 3 4 5 | YES NO | |

Tell me what you would SAY in these situations:

50. When I told X he is not supposed to jump on the furniture in the living room, he began to scream and to hit me, so I said:

51. X had been playing alone for quite a while. Then he came over and said: "Mommy, (Daddy) come play with me." I was busy at the time trying to get some things done. I told him I was busy and could not come right then. He left for a few minutes and then came back with the same request, so I said:

52. We had X's friend come over here one day. As soon as he started to play with one of X's toys, he told him he could not touch or play with them. I went to X and I said:

______________________________________________

______________________________________________

______________________________________________

53. Through the window I noticed X was outdoors making something. Just as he was about to finish, a playmate of his about the same age as X accidentally damaged it. From what I could see, I was sure it was an accident. By the time I got outside, X was hitting and kicking at his playmate, who was crying. While there seemed to be no danger of either of them getting really hurt, I didn't think that X was doing the right thing in hitting his playmate, so I said:

______________________________________________

______________________________________________

______________________________________________

54. The other day when I was doing some work around the house X came home from school with a painting he wanted me to see, so I said:

______________________________________________

______________________________________________

______________________________________________

55. The last time we had a big thunderstorm X watched the lightning through the window and later he asked me what made it thunder and lightning, so I said:

______________________________________________

______________________________________________

______________________________________________

56. A friend down the street just died. X knew him very well and was very fond of him. When he found out the man died, he asked what it was like to die, so I said:

______________________________________________

______________________________________________

______________________________________________

57. How important do you think it is that a child mind his parents? (Card #9)

UNIMPORTANT 1 2 3 4 5 IMPORTANT

58. What proportion of the time can a child be expected to mind his parents? (Card #10)

NONE 1 2 3 4 5 ALL

59. How does a child LEARN to mind his parents?

60. What do you tell your child is the reason he should mind? (Probe until clear and complete.)

61. In which of the following situations do you feel that the child should be punished and in which should he not be punished? (If should) How severe should the punishment be? (Card #11)

| SITUATION | PUNISH | | SEVERE | | | | MILD |
|---|---|---|---|---|---|---|---|
| a. Not finishing food at meals | P | NP | 1 | 2 | 3 | 4 | 5 |
| b. Hitting brother or sister | P | NP | 1 | 2 | 3 | 4 | 5 |
| c. Playing with electric light outlets | P | NP | 1 | 2 | 3 | 4 | 5 |
| d. Talking instead of going to sleep | P | NP | 1 | 2 | 3 | 4 | 5 |
| e. Tearing or losing clothes | P | NP | 1 | 2 | 3 | 4 | 5 |
| f. Demanding attention | P | NP | 1 | 2 | 3 | 4 | 5 |
| g. Saying dirty words | P | NP | 1 | 2 | 3 | 4 | 5 |
| h. Scribbling on the walls or in books | P | NP | 1 | 2 | 3 | 4 | 5 |
| i. Throwing a temper tantrum or fit | P | NP | 1 | 2 | 3 | 4 | 5 |
| j. Telling personal family matters | P | NP | 1 | 2 | 3 | 4 | 5 |
| k. Romping in the car when traveling | N | NP | 1 | 2 | 3 | 4 | 5 |
| l. Hitting his parents | N | NP | 1 | 2 | 3 | 4 | 5 |
| m. Being sassy | N | NP | 1 | 2 | 3 | 4 | 5 |
| n. Lying | N | NP | 1 | 2 | 3 | 4 | 5 |
| o. Refusing to share his toys | N | NP | 1 | 2 | 3 | 4 | 5 |
| p. Stealing | N | NP | 1 | 2 | 3 | 4 | 5 |
| q. Taking things apart around the house | N | NP | 1 | 2 | 3 | 4 | 5 |
| r. Not doing homework | N | NP | 1 | 2 | 3 | 4 | 5 |

62. a. What is the strongest punishment you can think of for a child of kindergarten age?

______________________________________________________________

b. What is the next strongest punishment?

______________________________________________________________

______________________________________________________________

63. Here's a list of possible duties that parents might have toward their children. (Show Card #12) Let's read through them together, and you pick out the most important one. (Read aloud while interviewee follows card -- then ask a.)

a. Which one is the most important duty parents have toward their children? (Mark 1 in blank)

b. Now look over the rest. What is the next most important duty? (Mark 2)

c. - h. Repeat "b" until all categories ranked (1 - 8).

_____ a. To PROVIDE food, clothing, and other needs.

_____ b. To LOVE them and how them affection.

_____ c. To help them get a good EDUCATION.

_____ d. To be good FRIENDS with them and help them solve their problems.

_____ e. To give them FREEDOM in certain areas as they develop their own personality.

_____ f. To teach them RIGHT FROM WRONG and be a good EXAMPLE.

_____ g. To WATCH over them so they don't get bad habits or get into trouble.

_____ h. To PREPARE them to be active citizens, doing their part in society.

64. Here's a list of possible duties that children might have toward their parents. (Show Card #13) Let's do the same as we did last time. (Read list)

a. Which one is the most important duty children have toward their parents? (Mark 1)

b. The next most important? (Mark 2)

c. - f. Repeat "b" until all categories ranked (1 - 6).

_____ a. To be OBEDIENT and respect their parents.

_____ b. To be POLITE and have good manners.

_____ c. To HELP their parents FINANCIALLY when they need help.

_____ d. To LOVE and be INTERESTED in their parents when they are old.

_____ e. To FOLLOW the EXAMPLE of their parents as good citizens.

_____ f. to DO WELL in school and their jobs.

Tell me whether you agree or disagree with the following statements: (Card #14)
(substitute terms in parentheses for fathers)

65. Children should be more considerate of their mothers (fathers) since their mothers (fathers) suffer so much for them.

CAg PAg PD CD

66. Sex is one of the greatest problems to be contended with in all children.

CAg PAg PD CD

67. Children pester you with all their little upsets if you aren't careful from the first

CAg PAg PD CD

68. Children should never learn things outside the home which make them doubt their parent's ideas.

CAg PAg PD CD

69. The sooner a child learns to walk the better he is trained.

CAg PAg PD CD

70. A mother (father) should do her (his) best to avoid any disappointment for her (his) child.

CAg PAg PD CD

71. Parents should know better than to allow their child to be exposed to difficult situations.

CAg PAg PD CD

72. A good mother (father) will find enough social life within the family.

CAg PAg PD CD

73. Mothers (fathers) sacrifice almost all their own fun for their children.

CAg PAg PD CD

74. The trouble with giving attention to children's problems is they usually just make up a lot of stories to keep you interested.

CAg PAg PD CD

75. Most children are toilet trained by 15 months of age.

CAg PAg PD CD

76. A mother (father) has a right to know everything going on in her (his) child's life because her (his) child is a part of her (him).

CAg PAg PD CD

77. Few men (women) realize that a mother (father) needs some fun in life too.

CAg PAg PD CD

78. Children soon learn there is no greater wisdom than that of their parents.

CAg PAg PD CD

Different people have different opinions about duties, obligations, and rights of a married woman. (Show Card #14) Tell me whether you agree or disagree with the following opinions, and how strongly.

79. a. I believe that the place of a married woman is in the home.

CAg PAg PD CD CAns

b. A working woman can be as good a mother as one who stays at home, even when the children are small.

CAg PAg PD CD CAns

c. A married woman must work and help her husband when their financial situation is not good.

CSg PAg PD CD CAns

d. A working woman usually neglects her husband and children.

CAg PAg PD CD CAns

e. A married woman who wants very much to work, should work, even when her husband does not completely agree.

CAg PAg PD CD CAns

f. Marriage and children are more important than anything else in a woman's life.

CAg PAg PD CD CAns

g. Married women must not have personal ambitions for success but must be satisfied with their husband's success.

CAg PAg PD CD CAns

(If not certain of marital status) Are you married, divorced, separated, widowed, or single? (If very certain, circle without asking) Mar Div Sep Wid Sin

FOR MARRIED ONLY: IF DIVORCED, SEPARATED, WIDOWED, GO TO #94.

For each of the following statements tell me whether you and your H/W completely agree, partially agree, partially disagree, or completely disagree. (Show Card #14) (Accept can't answer only if additional pressure to choose fails.)

81. Do you and your H/W agree on what things the child does that should be punished?

CAg PAg PD CD CAns

82. Do you agree on the way the child should be punished?

CA g PAg PD CD CAns

83. Do you agree on the kinds of things your child should do to help around the house?

CAg PAg PD CD CAns

84. Do you agree when your child is sick enough to need a doctor?

CAg PAg PD CD CAns

85. Do you agree on how much education your child should have?

CAg PAg PD CD CAns

86. Do you agree on how much help your child should have with homework?

CAg PAg PD CD CAns

87. Do you agree on who should punish the child?

CAg PAg PD CD CAns

88. In all married couples one person takes greater responsibility in some matters, while the other takes greater responsibility in other matters. In YOUR case, who takes the greater responsibility on the following matters? (Circle H-husband, W-wife, B-both [Accept "both" only if additional pressure to choose fails])

| | Responsibility | | | Disagree | |
|---|---|---|---|---|---|
| a. | H | W | B | _____ | In the rearing of the children |
| b. | H | W | B | _____ | In the use of available money |
| c. | H | W | B | _____ | In your relations with in-laws |
| d. | H | W | B | _____ | In what doctor to have when someone is sick |
| e. | H | W | B | _____ | In ways of spending free time |
| f. | H | W | B | _____ | In whether or not to buy life insurance |
| g. | H | W | B | _____ | In the number of children you ought to have |
| h. | H | W | B | _____ | In the choice of friends |
| i. | H | W | B | _____ | In the purchase of clothes for the entire family |
| j. | H | W | B | _____ | In what car to get |
| k. | H | W | B | _____ | In the purchase of furniture or household items |
| l. | H | W | B | _____ | In what job the husband should take |
| m. | H | W | B | _____ | In the purchase of food |
| n. | H | W | B | _____ | In what house or apartment to buy or rent |

89. In which of these matters do you ever have disagreements with your H/W? (Reread the list and check the ones where disagreements occur)

90. How do you manage to make your husband (wife) go along with you when he (she) was initially opposed? PROBES: What do you do exactly? Give an example. PROBE FOR A COMPLETE AND SPECIFIC ANSWER OR AN EXAMPLE. (PROBE for the following kind of answer: Drop it until in a GOOD MOOD then bring it up again.)

____________________________________________

____________________________________________

____________________________________________

____________________________________________

91. How satisfied are you with your standard of living, that is, with the available money for food, clothing, rent, and entertainment? (Show Card #15)

VS S CC CB D

92. How satisfied are you with the way your husband (wife) understands your worries, problems, and troubles?

VS S CC CB D

93. How satisfied are you with the degree of tenderness your husband (wife) shows you?

VS S CC CB D

FOR DIVORCED, SEPARATED, WIDOWED, AND SINGLE ONLY: MARRIED GO TO #98.

94. How satisfied are you with your standard of living at the present time, that is with the available money for food, clothing, rent, and entertainment? (Show Card #15).

VS S CC CB D

95. a. Does anyone help you make decisions in any of the following areas?

| | | |
|---|---|---|
| In the rearing of the children | Yes | No |
| In the use of available money | Yes | No |
| In what doctor to have when someone is sick | Yes | No |
| In ways of spending free time | Yes | No |
| In whether or not to buy life insurance | Yes | No |
| In the choice of friends | Yes | No |
| In the purchase of clothes for the entire family | Yes | No |
| In what car to get | Yes | No |
| In the purchase of furniture or household items | Yes | No |
| In the purchase of food | Yes | No |
| In what house or apartment to buy or rent | Yes | No |

b. (If any yes) Who is this person (relationship) and how important is his or her opinion? (Card #16)

| | Necessary | | | Unimportant | |
|---|---|---|---|---|---|
| ______________________________ | 1 | 2 | 3 | 4 | 5 |
| ______________________________ | 1 | 2 | 3 | 4 | 5 |

QUESTIONS FOR DIVORCED OR SEPARATED WOMEN ONLY; MARRIED, WIDOWED, OR SINGLE GO TO #98

96. a. How often does your child's father see the children? ____________ per week

____________ per month

b. (If with some frequency) Is this pretty regular or not? Regular___ Irregular___

c. What kinds of things to they do together?

______________________________________________

______________________________________________

______________________________________________

97. Since you have been divorced (separated) would you say that you are closer to your parents and relatives, the same, or less close to them than before?

closer   same   less close

(If not same) Why? (In which way?) ______________________________________________

______________________________________________

98. Now thinking about X, if he does his VERY BEST, what job do you think he could have when he grows up?

______________________________________________

99. Taking the other side of the picture, if he DOESN'T do very well, what job do you think he might have when he grows up?

______________________________________________

100. Now tell me what job you would LIKE to see X in when he grows up if it were COMPLETELY UP TO YOU and he could have whatever job you WISHED?

______________________________________________

101. What do you think the CHANCES are of X REALLY GETTING to be (answer to #100)? (Show Card #17)

Sure 1 2 3 4 5 No chance

102. Now tell me how HAPPY or UNHAPPY you would be if he has the following job when he is grown? (Show Card #18) (Read occupation in parentheses, if available, for daughters; otherwise read same for both sexes.)

| | Happy | | | | Unhappy |
|---|---|---|---|---|---|
| a. sales clerk | 1 | 2 | 3 | 4 | 5 |
| b. real estate agent | 1 | 2 | 3 | 4 | 5 |
| c. stock handler in a store | 1 | 2 | 3 | 4 | 5 |
| d. mail carrier (secretary) | 1 | 2 | 3 | 4 | 5 |
| e. clergyman (social worker) | 1 | 2 | 3 | 4 | 5 |
| f. lawyer | 1 | 2 | 3 | 4 | 5 |
| g. electrician (inspector in a milk bottling plant) | 1 | 2 | 3 | 4 | 5 |
| h. bartender (waitress) | 1 | 2 | 3 | 4 | 5 |
| i. popular singer | 1 | 2 | 3 | 4 | 5 |
| j. public school teacher | 1 | 2 | 3 | 4 | 5 |
| k. meat cutter (dressmaker) | 1 | 2 | 3 | 4 | 5 |
| l. medical doctor | 1 | 2 | 3 | 4 | 5 |
| m. bookkeeper | 1 | 2 | 3 | 4 | 5 |
| n. carpenter (store display decorator) | 1 | 2 | 3 | 4 | 5 |
| o. army corporal | 1 | 2 | 3 | 4 | 5 |
| p. baseball player (actress) | 1 | 2 | 3 | 4 | 5 |
| q. mayor of a large city | 1 | 2 | 3 | 4 | 5 |
| r. funeral director (music teacher) | 1 | 2 | 3 | 4 | 5 |
| s. barber (beautician) | 1 | 2 | 3 | 4 | 5 |
| t. elevator operator | 1 | 2 | 3 | 4 | 5 |
| u. garage mechanic (foreman in a dress factory) | 1 | 2 | 3 | 4 | 5 |
| v. soda fountain clerk | 1 | 2 | 3 | 4 | 5 |
| w. factory worker | 1 | 2 | 3 | 4 | 5 |
| x. policeman (policewoman) | 1 | 2 | 3 | 4 | 5 |

102. continued

| | Happy | | | | Unhappy |
|---|---|---|---|---|---|
| y. jewelry maker | 1 | 2 | 3 | 4 | 5 |
| z. owner of a large grocery store | 1 | 2 | 3 | 4 | 5 |
| A. radio announcer | 1 | 2 | 3 | 4 | 5 |
| B. janitor (maid) | 1 | 2 | 3 | 4 | 5 |
| C. army captain | 1 | 2 | 3 | 4 | 5 |
| D. bank teller | 1 | 2 | 3 | 4 | 5 |
| E. building contractor (restaurant manager) | 1 | 2 | 3 | 4 | 5 |
| F. airline pilot (librarian) | 1 | 2 | 3 | 4 | 5 |
| G. truck driver (school bus driver) | 1 | 2 | 3 | 4 | 5 |

103. If X were able to earn AS MUCH money as YOU WANTED when he is grown up, how much money would you LIKE him to earn each week?

________________________________ per week month year (circle)

104. How much money do you REALLY THINK X will be earning each week when he is grown up?

________________________________ per week month year (circle)

105. In general, how much influence do you think parents have over: (Show Card #19)

| | Great deal | | | | None |
|---|---|---|---|---|---|
| the kind of job their children will ACTUALLY GET ? | 1 | 2 | 3 | 4 | 5 |
| the kind of job their children will WANT? | 1 | 2 | 3 | 4 | 5 |
| 106. How much influence do you think YOU will have over the KIND of job your child will take? | 1 | 2 | 3 | 4 | 5 |
| 107. How much influence would you LIKE to have over the KIND of job your child will take? | 1 | 2 | 3 | 4 | 5 |

108. I'm going to give you different amounts of money that some people earn EACH WEEK. Tell me how HAPPY or UNHAPPY you would be if X were earning each of these amounts when he is grown? (Show Card #20) (Quit after 2 one's in a row.)

| | Happy | | | | Unhappy |
|---|---|---|---|---|---|
| a. up to $60 per week | 1 | 2 | 3 | 4 | 5 |
| b. $60 to $75 per week | 1 | 2 | 3 | 4 | 5 |
| c. $75 to $100 per week | 1 | 2 | 3 | 4 | 5 |
| d. $100 to $150 per week | 1 | 2 | 3 | 4 | 5 |
| e. $150 to $200 per week | 1 | 2 | 3 | 4 | 5 |
| f. $200 to $250 per week | 1 | 2 | 3 | 4 | 5 |
| g. more than $250 per week | 1 | 2 | 3 | 4 | 5 |

109. How much effect would you say that parent's hopes and goals have on what their children turn out to be? (Show Card #21)

Much Some Little None

110. In what way are you as a parent INFLUENCING what kind of a PERSON your child will become as a grown-up, that is, other than his occupation or education?

______________________________________________

______________________________________________

______________________________________________

Name of interviewee ____________________ Sex: M F Race: W N other_____

111. Relationship to child: Mother Father Other____________________

(If other) How long has X been living with your family? ____________________

112. How many children have you ever had? __________
(If further clarification necessary) How many children born alive? __________

113. (For kindergarten parents only)

a. Has X had nursery school experience? Yes No

b. (If yes) Where? Head Start _____ Private _____

114. a. Who is living in the household at the present time and what is their age? (include parents, relatives, and other adults, circle interviewee; include all children, circle X)

Use following code for relationship to X: M=mother, SM=stepmother, F=father, SF=stepfather, B=brother, 1/2B=half-brother, S=sister, 1/2S=half-sister, A=aunt, U=uncle, GM=grandmother, GF=grandfather, C=cousin, N=not related

b. (If not indicated) How is this person related to you?

| Name | Age | Relationship | Name | Age | Relationship |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

115. Has the family (X's) always lived in Detroit? Yes No

(If no) When did the family move to Detroit (year)? ______

Where were you born? ________________________________

116. a. What is the last year you finished in school? ______________________

b. Do you have any other training? Yes No

(If yes) How much? ______________________________________________

117. a. Are you currently employed? Yes No (If yes) Full or part time? F P

b. What is your present (or last) job? (Probe for exact nature of work)

_____________________________________ ________________________

__________________________________________________________________

118. a. What is the last year X's mother/father finished in school ____________

b. Does he/she have any other training? Yes No

(If so) What and how much? __________________________________________

__________________________________________________________________

119. a. Is X's mother/father currently employed? Yes No DK Full or part time? F P

b. What is his/her present (last) job? (Probe)

__________________________________________________________________

__________________________________________________________________

__________________________________________________________________

120. Now, to be sure I have this right, is X's mother/father living in the household? Yes No

121. Is there any other source of income than yours and/or your husband's/wife's employment? Yes No

(If so) What? __________________________________________________

_________________________________________________________ _____

__________________________________________________________________

122. This question is optional, so you don't have to tell me, if you don't want to, but I'd like to know:

a. (If working) Which of these categories is the amount YOU earn per year? (Show Card #22)

1. under $3,000 2. $3-5,000 3. $5-7,000 4. $7-10,000 5. over $10,000

b. (If married and spouse working) Which of these categories is the amount your HUSBAND/WIFE earns per year?

1. under $3,000 2. $3-5,000 3. $5-7,000 4. $7-10,000 5. over $10,000

c. (If same category on a & b) Who earns the most, you or your H/W?

self husband/wife

122. How many rooms do you have in the home, including bathroom? ________________

Address: ________________________________________________

Interviewer: ______________________ Date: ______________________

Total time for interview: ______